



EUROPEAN COMMISSION
RESEARCH DG HUMAN RESOURCES
AND MOBILITY

RTN Periodic Activity Report

Project No: 35863

Project Acronym: UniverseNet

Project Full Name: The origin of our universe: seeking links between
fundamental physics and cosmology

Marie Curie Actions

RTN Periodic Activity Report

Period covered: from 01/10/2007 to 30/09/2008

Date of preparation: 19/12/2008

Period number: 2nd

Start date of project: 01/10/2006

Date of submission (SESAM):
19/12/2008 16:05:04 CET

Project coordinator name:

Duration: 48

Project coordinator organisation name:
THE CHANCELLOR, MASTERS AND SCHOLARS
OF THE UNIVERSITY OF OXFORD

Version: 1

Marie Curie Actions

RTN Periodic Activity Report

GENERAL INFORMATION

Project No:	35863
Project acronym:	UniverseNet
Project full name:	The origin of our universe: seeking links between fundamental physics and cosmology
Period number:	2nd
Period covered - start date:	01/10/2007
Period covered - end date:	30/09/2008
Project start date:	01/10/2006
Project duration [months]:	48
Project coordinator name:	
Project coordinator organisation name:	THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD
Date of submission:	03/12/2008

SUMMARY OF THE RECRUITMENT DURING THE REPORTING PERIOD

Contractor: THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Philipp Mertsch	ESR (<4 years)	DE-Germany	No	Male	01/10/2007	30/09/2008	Full Time	12.0
Arman Shafieloo	ER (4-10 years)	IR-Iran (Islamic Republic of)	No	Male	15/09/2008	30/09/2008	Full Time	0.5

Contractor: LANCASTER UNIVERSITY

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Narendra Sahu	ER (4-10 years)	IN-India	No	Male	01/10/2007	30/09/2008	Full Time	12.0

Contractor: KING'S COLLEGE LONDON.

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Anna Kostouki	ESR (<4 years)	EL-Greece	Yes	Female	01/10/2007	30/09/2008	Full Time	12.0

Contractor: INSTITUT DE FISICA D'ALTES ENERGIES

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Thomas Konstandin	ER (4-10 years)	DE-Germany	No	Male	01/11/2007	30/09/2008	Full Time	11.0

Contractor: RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITAET BONN

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Suchita Kulkarni	ESR (<4 years)	IN-India	No	Female	01/10/2007	30/09/2008	Full Time	12.0

Contractor: RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITAET BONN

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Eun Kyung Park	ER (4-10 years)	KP-Korea (Democratic People's Republic of)	No	Female	01/10/2007	30/09/2008	Full Time	12.0

Contractor: LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					

Contractor: NORDISK INSTITUT FOR TEORETISK FYSIK

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					

Contractor: EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Lotta Mether	ESR (<4 years)	FI-Finland	No	Female	01/01/2008	30/04/2008	Full Time	4.0
Nicholas Harries	ESR (<4 years)	UK-United Kingdom	No	Male	01/11/2007	29/02/2008	Full Time	4.0
Charalampos Bogdanos	ESR (<4 years)	EL-Greece	Yes	Male	01/11/2007	29/02/2008	Full Time	4.0

Contractor: HELSINGIN YLIOPISTO

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Diana Battefeld	ESR (<4 years)	US-United States	No	Female	01/10/2007	30/09/2008	Full Time	12.0
Gerasimos Rigopoulos	ER (4-10 years)	EL-Greece	Yes	Male	01/10/2007	30/09/2008	Full Time	12.0

Contractor: UNIVERSITY OF IOANNINA.

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Katarzyna Zuleta	ER (4-10 years)	PL-Poland	Yes	Female	01/10/2007	30/09/2008	Full Time	12.0
Nicolas Chatillon	ER (4-10 years)	FR-France	No	Male	01/10/2007	30/06/2008	Full Time	9.0

Contractor: ISTITUTO NAZIONALE DI FISICA NUCLEARE

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					

Contractor: UNIVERSITE DE PARIS VII DENIS DIDEROT

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Eugeny Babichev	ER (4-10 years)	RU-Russian Federation	No	Male	01/12/2007	30/09/2008	Full Time	10.0

Contractor: CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Wessel Valkenburg	ESR (<4 years)	NL-Netherlands	No	Male	01/10/2007	30/09/2008	Full Time	12.0

Contractor: UNIWERSYTET WARSZAWSKI

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Paul Hunt	ER (4-10 years)	UK-United Kingdom	No	Male	01/10/2007	30/09/2008	Full Time	12.0
Ioannis Ntalianis	ESR (<4 years)	EL-Greece	No	Male	01/10/2007	30/09/2008	Full Time	12.0

Contractor: SEOUL NATIONAL UNIVERSITY

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					

Contractor: University of Copenhagen

Name of the Researcher (as stated at time of selection)	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months covered by this recruitment during this reporting period
		Country	LFR					
Hael Collins	ER (4-10 years)	US-United States	No	Male	01/10/2007	31/08/2008	Full Time	11.0

TOTAL PMM PER CONTRACTOR

Contractor: THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment during this reporting period

12.5

Contractor: LANCASTER UNIVERSITY

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment during this reporting period

12.0

Contractor: KING'S COLLEGE LONDON.

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment during this reporting period

12.0

Contractor: INSTITUT DE FISICA D'ALTES ENERGIES

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment during this reporting period

11.0

Contractor: RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITAET BONN

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment during this reporting period

24.0

Contractor: LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN

No. of full-time equivalent months to be delivered according to the contract: 6.0

No. of full-time equivalent months covered by this recruitment during this reporting period

0.0

Contractor: NORDISK INSTITUT FOR TEORETISK FYSIK

No. of full-time equivalent months to be delivered according to the contract: 0.0

No. of full-time equivalent months covered by this recruitment during this reporting period

0.0

Contractor: EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

No. of full-time equivalent months to be delivered according to the contract: 6.0

No. of full-time equivalent months covered by this recruitment during this reporting period

12.0

Contractor: HELSINGIN YLIOPISTO

No. of full-time equivalent months to be delivered according to the contract: 18.0

No. of full-time equivalent months covered by this recruitment during this reporting period
24.0

Contractor: UNIVERSITY OF IOANNINA.

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment during this reporting period
21.0

Contractor: ISTITUTO NAZIONALE DI FISICA NUCLEARE

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment during this reporting period
0.0

Contractor: UNIVERSITE DE PARIS VII DENIS DIDEROT

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment during this reporting period
10.0

Contractor: CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment during this reporting period
12.0

Contractor: UNIWERSYTET WARSZAWSKI

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment during this reporting period
24.0

Contractor: SEOUL NATIONAL UNIVERSITY

No. of full-time equivalent months to be delivered according to the contract: 0.0

No. of full-time equivalent months covered by this recruitment during this reporting period
0.0

Contractor: University of Copenhagen

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment during this reporting period
11.0

TOTAL PMM FOR ALL CONTRACTORS

No. of full-time equivalent months to be delivered according to the contract	No. of full-time equivalent months covered by this recruitment during this reporting period
210.0	185.5

SUMMARY OF THE EMPLOYMENT FORECAST FOR THE NEXT REPORTING PERIOD

Contractor: THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Phillipp Mertsch	ESR (<4 years)	DE-Germany	No	Male	01/10/2008	30/09/2009	Full Time	12.0
Arman Shafieloo	ER (4-10 years)	IR-Iran (Islamic Republic of)	No	Male	01/10/2008	30/09/2009	Full Time	12.0

Contractor: LANCASTER UNIVERSITY

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Narendra Sahu	ER (4-10 years)	IN-India	No	Male	01/10/2008	30/09/2009	Full Time	12.0

Contractor: KING'S COLLEGE LONDON.

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Anna Kostouki	ESR (<4 years)	EL-Greece	Yes	Female	01/10/2008	30/09/2009	Full Time	12.0

Contractor: INSTITUT DE FISICA D'ALTES ENERGIES

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Thomas Konstandin	ER (4-10 years)	DE-Germany	No	Male	01/10/2008	30/09/2009	Full Time	12.0
Nikolaos Brouzakis	ESR (<4 years)	EL-Greece	No	Male	01/10/2008	30/09/2009	Full Time	12.0

Contractor: RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITAET BONN

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Suchita Kulkarni	ESR (<4 years)	IN-India	No	Female	01/10/2008	30/09/2009	Full Time	12.0
Eun Kyung Park	ER (4-10 years)	KP-Korea (Democratic People's Republic of)	No	Female	01/10/2008	30/09/2009	Full Time	12.0

Contractor: LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Vittoria Demozzi	ESR (<4 years)	IT-Italy	No	Female	01/12/2008	30/09/2009	Full Time	10.0

Contractor: NORDISK INSTITUT FOR TEORETISK FYSIK

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					

Contractor: EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Jose Miguel	ESR (<4 years)	ES-Spain	No	Male	01/04/2009	30/09/2009	Full Time	6.0

Contractor: HELSINGIN YLIOPISTO

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Diana Battefeld	ESR (<4 years)	US-United States	No	Female	01/10/2008	30/09/2009	Full Time	12.0
Gerasimos Rigopoulos	ER (4-10 years)	EL-Greece	Yes	Male	01/10/2008	30/09/2009	Full Time	12.0

Contractor: UNIVERSITY OF IOANNINA.

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Katarzyna Zuleta	ER (4-10 years)	PL-Poland	Yes	Female	01/10/2008	30/09/2009	Full Time	12.0
Juan Sanchez Bueno	ER (4-10 years)	ES-Spain	No	Male	08/01/2009	30/09/2009	Full Time	8.75

Contractor: ISTITUTO NAZIONALE DI FISICA NUCLEARE

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Michael Gustafsson	ER (4-10 years)	SE-Sweden	No	Male	03/11/2008	30/09/2009	Full Time	11.0

Contractor: UNIVERSITE DE PARIS VII DENIS DIDEROT

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Eugeny Babichev	ER (4-10 years)	RU-Russian Federation	No	Male	01/10/2008	30/09/2009	Full Time	12.0

Contractor: CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Wessel Valkenburg	ESR (<4 years)	NL-Netherlands	No	Male	01/10/2008	30/09/2009	Full Time	12.0

Contractor: UNIWERSYTET WARSZAWSKI

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					
Paul Hunt	ER (4-10 years)	UK-United Kingdom	No	Male	01/10/2008	30/09/2009	Full Time	12.0
Ioannis Ntalianis	ESR (<4 years)	EL-Greece	No	Male	01/10/2008	30/09/2009	Full Time	12.0

Contractor: SEOUL NATIONAL UNIVERSITY

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					

Contractor: University of Copenhagen

Name of the Researcher	Type	Origin		Gender	Start date of recruitment	End date of recruitment	Working time commitment	No. of full-time equivalent months in the next reporting period
		Country	LFR					

TOTAL PMM PER CONTRACTOR

Contractor: THE CHANCELLOR, MASTERS AND SCHOLARS OF THE UNIVERSITY OF OXFORD

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment for the next reporting period

24.0

Contractor: LANCASTER UNIVERSITY

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment for the next reporting period

12.0

Contractor: KING'S COLLEGE LONDON.

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment for the next reporting period

12.0

Contractor: INSTITUT DE FISICA D'ALTES ENERGIES

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment for the next reporting period

24.0

Contractor: RHEINISCHE FRIEDRICH-WILHELMS-UNIVERSITAET BONN

No. of full-time equivalent months to be delivered according to the contract: 18.0

No. of full-time equivalent months covered by this recruitment for the next reporting period

24.0

Contractor: LUDWIG-MAXIMILIANS-UNIVERSITAET MUENCHEN

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment for the next reporting period

10.0

Contractor: NORDISK INSTITUT FOR TEORETISK FYSIK

No. of full-time equivalent months to be delivered according to the contract: 0.0

No. of full-time equivalent months covered by this recruitment for the next reporting period

0.0

Contractor: EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

No. of full-time equivalent months to be delivered according to the contract: 6.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
6.0

Contractor: HELSINGIN YLIOPISTO

No. of full-time equivalent months to be delivered according to the contract: 18.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
24.0

Contractor: UNIVERSITY OF IOANNINA.

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
20.75

Contractor: ISTITUTO NAZIONALE DI FISICA NUCLEARE

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
11.0

Contractor: UNIVERSITE DE PARIS VII DENIS DIDEROT

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
12.0

Contractor: CENTRE NATIONAL DE LA RECHERCHE SCIENTIFIQUE (CNRS)

No. of full-time equivalent months to be delivered according to the contract: 12.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
12.0

Contractor: UNIWERSYTET WARSZAWSKI

No. of full-time equivalent months to be delivered according to the contract: 24.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
24.0

Contractor: SEOUL NATIONAL UNIVERSITY

No. of full-time equivalent months to be delivered according to the contract: 0.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
0.0

Contractor: University of Copenhagen

No. of full-time equivalent months to be delivered according to the contract: 0.0

No. of full-time equivalent months covered by this recruitment for the next reporting period
0.0

TOTAL PMM FOR ALL CONTRACTORS

No. of full-time equivalent months to be delivered according to the contract	No. of full-time equivalent months covered by this recruitment during this reporting period
222.0	215.75

PROJECT ACHIEVEMENTS DURING THE REPORTING PERIOD

Research Achievements

* Organisation of or participation in and presentations to external specialist workshops and conferences

UniverseNet members have been involved in organising and/or giving key talks at 76 conferences, schools and workshops - see Appendix 1.

* Specialist exchange among Network Partners (number, nature, when, where, who)

There have been many such visits for collaborative work (although not all were reported with dates etc.

* Individual and joint publications, directly related to the work undertaken within the contract (number, references)

During 2007-08 UniverseNet members have produced 208 relevant publications, 66 of which were inter-team collaborations. Bibliographic details (including author affiliations and up-to-date citation data) are given in Appendix 2.

* Development of new scientific collaborations (number, references)

UniverseNet is helping to promote and sustain a variety of scientific collaborations across European theoretical physics groups investigating the fundamental physics which shaped our Universe. Fig. 1 (Appendix 3) graphically illustrates the breadth of these collaborations which have resulted in 97 joint publications so far.

* Scientific awards and prizes obtained from the work directly related to the contract (number, details)

None (directly related to the contact).

* Interest expressed in the Networks' dedicated Website

Our website (from April 2007) (<http://www.physics.ox.ac.uk/univnet/default.htm>) has had 6,079 unique visitors from around the world (see Figs. 2, 3 in Appendix 3).

The website (<http://www-thphys.physics.ox.ac.uk/users/SubirSarkar/univnet.html>) which was set up initially has had 3,540 hits to date (2,543 unique visitors, 1,786 first time visitors returning).

* Visits of Senior Researchers from inside and/or outside the Network (number, name, place and time of visit)

There were many visits of senior members of UniverseNet to other Teams in the network. In the second annual school in Oxford we welcomed as lecturers Jenni Adams (Christchurch), Lars Bergstrom (Stockholm), Wilfried Buchmuller (Hamburg), Sergio Colafrancesco (Rome), Joe Conlon (Cambridge) Amol Dighe (Mumbai) and Hiranya Peiris (Cambridge).

* Contacts with relevant academic users groups (number, name)

Announcements of UniverseNet meetings, vacant positions etc were circulated by the UK Cosmology network.

* General progress with research activities programmed at individual, participant team and Network level

Overall the research activities proceeded according to plan - there were many papers written on the

key objectives (dark matter, lepto/baryogenesis, inflation, string/M-theory cosmology, high energy cosmic rays & neutrinos), about 40% of which were inter-Team collaborations.

* Highlights on particularly innovative developments (novel concepts, approaches, methods)

The highlights of research carried out by UniverseNet during its 2nd year were discussed by the appointed Task Coordinators at the Mid-Term Review Meeting (downloads: <http://www.physics.ox.ac.uk/univnet/meeting2008/midtermreview.htm>):

Origin of matter (Mariano Quiros), Origin of dark matter (Manuel Drees). Origin of dark energy (Toni Riotto), Origin of structure (David Lyth), Origin of cosmic rays (Gunter Sigl). Origin of space-time (Soo-Jong Rey). As is usual in frontier fields of research, new techniques (both analytic and computational) are developed and used as required in response to the challenges that arise.

* Citation index for individual and joint publications directly related to the work undertaken within the contract

The up-to-date citations received by each UniverseNet publication can be determined from the SLAC-SPIRES database to which the entries are linked on the webpage: http://www.physics.ox.ac.uk/universenet/universenet_publications.htm.

The papers were published in high impact factor international journals such as Astroparticle Physics, Journal of Cosmology and Astroparticle Physics, Journal of High Energy Physics, Nuclear Physics B, Physical Review D, Physical Review Letters, Physics Letters B, Science, etc)

* Expected scientific breakthroughs

Concerning the task 'Origin of Cosmic Rays', there was a breakthrough by the Auger Collaboration (which includes UniverseNet members in Paris and Oxford) who established a significant correlation between the highest energy cosmic rays and active galactic nuclei which harbour supermassive black holes (Publication 2). The long predicted Greisen-Zatsepin-Kuzmin cutoff was also confirmed (Publication 6). This has generated a great deal of interest in the scientific community as well as in the media (see <http://www.auger.org/news/>).

* Overall progress and possible problems encountered with individual work packages and/or Network-wide research activities

No problems encountered.

* Nature and justification for adjustments, if any, to the original research work plan

None made.

* Progress on cross interaction among disciplines represented within the Network

The second annual network school (like the first) had leading experts lecturing on both particle physics and astrophysics/cosmology while the participants were approximately equally divided between the disciplines. This generated plenty of cross interactions.

* Access to/use of state-of-the-art infrastructure and facilities

Not applicable.

* Highlights on wider societal and/or ethical components of the project, such as public outreach activities

UniverseNet members have given many popular-level lectures to audiences of school children as

well as the general public, and written several articles on new developments in the subject for both popular magazines and more specialised non-science journals. A particular highlight was "A Physics Show Performed by Students for Kids: From Mechanics to Elementary Particle Physics" (arXiv:physics/0701344) which has proved to be a huge success with the public. Every year a new 2 hour show is presented by 2nd year undergraduates at Bonn University under Prof Herbi Dreiner's guidance, with six performances in a full (550 seat) auditorium - the clips on YouTube have been viewed by over a million people. Please see Appendix 4 (Outreach) for detailed information.

* Highlights on the scientific community recognition of the Network research contribution (awards, invitation to conferences, ...)

UniverseNet members have been invited to present their research at numerous national and international conferences as keynote/plenary speakers. Many of them have organised major conferences and/or served on the international advisory committees. Please see Appendix 1 for detailed information.

Training and ToK

* The rate of recruitment of ESR and ER for each participant and for the Network as a whole (ratio person-months filled/offered)

The summary of recruitment up to the MTR period is shown on the main table of this report.

Table 1 and Table 2 (Appendix 3) shows the breakdown of ESR-ER person-months of training already delivered and to be delivered in the coming years, plus sketches of the all researchers recruited so far by Universenet.

* The nature and justification for adjustments, if any, to the original overall number of person-months of ESR and ER as well as to the breakdown of this overall number among the participants (see table contained in Part C)

None

The time and duration of each individual appointment.

The time/duration of each individual appointment during the 1st and 2nd years is given as months delivered/total duration of appointment:

1. Oxford, ESR Phillipp Mertsch (12/36)
2. Oxford, ER, Arman Shafieloo (0/24)
3. Lancaster, ER Narendra Sahu (12/24)
4. KCL, ESR Anna Kostouki (23/36)
5. Barcelona, ER Thomas Konstandin (11/24)
6. Barcelona, ESR Nikolaos Brouzakis (0/24)
7. Bonn, ESR Suchita Kulkarni (13.75/18)
8. Bonn, ER Eun Kyung Park (12/24)
9. Muenchen, ESR Vittoria Demozzi (0/18)
10. Copenhagen, ER Hael Collins (12/12)
11. Helsinki, ESR Diana Battefeld (13/36)
12. Helsinki, ER Gerasimos Rigopoulos (12/24)
13. Ioannina, ER Nicolas Chatillon (9/9)
14. Ioannina, ER Katarzyna Zuleta (12/24)
15. Paris VII, ER Eugeny Babichev (10/24)
16. Annecy, ESR Wessel Valkenburg (23/36)
17. Warsaw, ER Paul Hunt (12/24)
18. Warsaw, ESR Ioannis Ntalianis (12/24)
19. CERN, ESR Lotta Mether (4/4)
20. CERN, ESR Nicholas Harries (4/4)
21. CERN, ESR Charalampos Bogdanos (4/4)

22. INFN, ER Michael Gustafsson (0/12)

* the number, names and level of involvement of senior researchers directly associated with the tutoring/supervision of the recruited ESR or ER, at each participant

Each ESR and ER has a local Supervisor as well as a "Mentor" (a senior person in another Team of the Network who they can turn to for independent help and advice)

1. Oxford, ESR: Phillipp Mertsch
(Supervisor: Subir Sarkar; Mentor: Herbi Dreiner)
2. Lancaster, ER :Narendra Sahu
(Supervisor: John McDonald; Mentor: Serguey Petcov)
3. KCL, ESR: Anna Kostouki
(Supervisor: Nick Mavromatos; Mentor: Smaragda Lola)
4. Barcelona, ER: Thomas Konstandin
(Supervisor: Mariano Quiros; Mentor: Christophe Grojean)
5. Bonn, ESR: Suchita Kulkarni
(Supervisor: Manuel Drees; Mentor: Sacha Davison)
6. Bonn, ER: Eun Kyung Park
(Supervisor: Manuel Drees; Mentor: Celine Boehm)
7. Copenhagen, ER: Hael Collins
(Supervisor: Anupam Majudar; Mentor: Denis Comelli)
8. Helsinki, ESR: Diana Battefeld
(Supervisor: Kari Enqvist; Mentor: Mairi Sakellariadou)
9. Helsinki, ER: Gerasimos Rigopoulos
(Supervisor: Kari Enqvist; Mentor: Konstantinos Dimopoulos)
10. Ioannina, ER: Nicolas Chatillon
(Supervisor: Kyriakos Tamvakis; Mentor: David Langlois)
11. Ioannina, ER: Katarzyna Zuleta
(Supervisor: Kyriakos Tamvakis; Mentor: Ruth Gregory)
12. Paris VII, ER: Eugeny Babichev
(Supervisor: Pierre Binetruy; Mentor: Krzysztof Meissner)
13. Annecy, ESR: Wessel Valkenburg
(Supervisor: Julien Lesgourgues; Mentor: Steen Hannestad)
14. Warsaw, ER: Paul Hunt
(Supervisor: Zygmunt Lalak; Mentor: Graham Ross)
15. Warsaw, ESR: Ioannis Ntalianis
(Supervisor: Zygmunt Lalak, Mentor: Anupam Majumdar)
16. CERN, ESR: Lotta Mether
(Supervisor: Ignatios Antoniadis; home Supervisor: Kari Enqvist)
17. CERN, ESR: Nicholas Harries
(Supervisor: John Ellis; home Supervisor: Graham Ross)
18. CERN, ESR: Charalampos Bogdanos
(Supervisor: Antonio Riotto; home Supervisor: Kyriakos Tamvakis)

* The number of ESR that are expected to present their PhD thesis and when

Diana Battefeld (Helsinki) defended her PhD thesis successfully in July 2008. Nicholas Harries (Oxford) had a successful DPhil thesis viva in September 2008.

* The number and place of the short visits and secondments undertaken by each individual ESR or ER either within or outside of the Network

Diane Battefeld (Helsinki) spent a couple of months at APC Paris under the tutelage of David Langlois and visited Yale University and, Princeton University where she has started collaborations. Wessel Valkenburg (Annecy) has visited Madrid while collaborating with members of the (extended) team there while Anna Kostouki (London) has made exploratory visits to the Athens (extended) team. Charalampos Bogdanos (Ioannina), Nicholas Harries (Oxford) and Lotta Mether (Helsinki) all spent 4 months at CERN, supported by UniverseNet, while Guillermo Ballestros (Madrid) and

Francesco Riva (Oxford) were supported at CERN by its own EU-funded Early Stage Researcher programme. Thomas Konstandin (Barcelona) and Philipp Mertsch (Oxford) also visited CERN to work with team members there. Charalampos Bogdanos has also visited University of Oxford, where he gave talks.

Thomas Konstandin also had several short visits (in total 5) of the University of Heidelberg for collaboration with M.G. Schmidt and A. Hernandez. Thomas also visited the Universidad Autonoma de Madrid for collaboration with J.R. Espinoza.

Katarzyna Zuleta visited Durham for collaboration with Prof R Gregory; she also has started collaborations with Dr. Yannis Burnier (Universitat Bielefeld, Germany); Dr Alberto Salvio, EPFL, and Prof. M. Shaposhnikov, EPFL, Lausanne. Katarzyna has also experienced collaborations with the with UniverseNet extended node NTUA.

* Number of visits of the ESR and ER to their home scientific community

Anna Kostouki attended the annual HEP conference of the Hellenic Society in Athens and gave a talk there. Diana Battefeld visited and started new projects in collaboration with people at Princeton and Yale University. Eun-Kyung Park attended SUSY08 in Korea, Jun 16 - 21, 2008. Wessel Valkenburg gave a talk at the University of Utrecht (Mar 2008).

* Attendance at Network meetings by the ESR and ER (number, names, place, date)

Eighteen ESR and ER attended the 2nd annual UniverseNet School/Meeting in Oxford, 22-26 September 2008 and nearly all of them gave talks on their research (all available on: <http://www.physics.ox.ac.uk/univnet/meeting2008/programme.htm>).

E. Babichev: Spherically symmetric solutions of massive gravity and the Goldstone ...

D. Battefeld: Preheating after multi-field inflation

C. Bogdanos: LEP II constraints on brane models with bulk leptons

H. Collins: Trans-Planckian relics in the scalar to tensor ratio

M. Gustafsson: Gamma rays from dark matter annihilation

P. Hunt: Constraints on large scale voids from WMAP-5 and SDSS

T. Konstandin: Gravitational waves by bubble collisions

A. Kostouki: Tachyon-dilaton inflation as an alpha'-non perturbative solution ...

S. Kulkarni: Investigating abundances of semi-relativistic dark matter

L. Mether: Leptogenesis with SUSY flat directions

I. Ntallanis: Cosmological implications of supersymmetry breaking

E-K. Park: A catalogue of neutralino dark matter ...

G. Rigopoulos: On the divergences of inflationary superhorizon perturbations

N. Sahu: Naturally light dark matter via Higgs portal and small scale structures

A. Shafieloo: Two new diagnostics of dark energy

W. Valkenburg: A prior dependence of the tensor-to-scalar ratio

K. Zuleta: Field-theoretical branes and their effective actions

The ESR P. Mertsch also attended the school. During the Network annual meeting on 26 September, all of the ESR and ER present gave brief presentations: see <http://www.physics.ox.ac.uk/univnet/meeting2008/midtermreview.htm>).

Participation in and presentations to workshops and conferences by ESR and ER (number, names, place, date)

SEE ATTACHED- APPENDIX 5 (LIST OF PARTICIPATION)

* Organisation of training events (e.g. schools, training workshop/seminar, hands-on training session on specialised instrument/techniques) at individual participant sites (number, attendees' names, place, date)

APC: Strings and Superstrings in Observational Cosmology, Paris, France. 10-13 Dec 2007, 61 participants

APC: The Nature of Dark Matter at Small Scales, Paris, France. 13-15 Feb 2008, 23 participants

APC: 2nd Workshop on "Cosmological Frontiers in Fundamental Physics" Paris, France. 19-23 May 2008, 70 participants

IFAE: PLANCK 08: "From The Planck Scale To The Electroweak Scale", Barcelona, 19-23 May 2008, 207 participants

INFN: "Early Universe Thermometers", Padova, 6-8 Feb 2008

NBI: Workshop on "Field Theory and Cosmology", Copenhagen, 25-28 Mar 2008

Oxford U.: "Astroparticle Physics 2008", 18-20 Jun 2008, 67 participants

Seoul U.: 16th International Conference on "Supersymmetry And The Unification Of Fundamental Interactions", Seoul, 16-21 Jun 2008

Warsaw U: weekly seminars and ToK workshops on Particle Physics and Cosmology.

* Organisation of Network-wide training events (number, attendees' names, place, date)

The annual network school training school was held in Oxford 22-26 Sep 2007, and attracted 139 participants about half of whom were from outside the network. There were pedagogical lectures every morning by invited experts (Jenni Adams, Lars Bergstrom, Willfried Buchmuller, Sergio Colafrancesco, Joe Conlon, Sacha Davidson, Amol Dighe and Hiranya Peiris) nearly all of whom were from outside the network (40% were female). The lectures covered contemporary issues in both astrophysical cosmology and particle cosmology and time was provided for questions and discussion after each lecture. In the afternoons there were short talks by young researchers - the number of talks offered exceeded the number of available slots so priority had to be given to network members (especially our ERs and ESRs). There was plenty of time for interactions among participants and new collaborations have begun as a result. Full details (including all lectures and talks given are available on: <http://www.physics.ox.ac.uk/univnet/meeting2008/home.htm>).

* Number, place, purpose of any meeting (e.g. workshop) organised by the ESR or ER themselves

Hael Collins helped to organize an international workshop at NBI, Copenhagen on "Field Theory and Cosmology", 25-28 Mar 2008. Thomas Konstandin served on the local organizing committee of the PLANCK08 conference, 19-23 May in Barcelona. Wessel Valkenburg (Annecy) helped to organize the "Journées des Lacs Alpains" meetings and the Benasque Workshop on Modern Cosmology, 27 Jun-14 Aug 2008. Philipp Mertsch and Arman Shafieloo (Oxford) are on the organizing committee of the second network school, 22-26 September 2008.

* General progress with training and ToK activities programmed at individual, participant team and Network level (type of guidance, supervision, coaching or Mentoring in place to support ESR and ER)

Each ESR/ER benefits from the training programme of the host institution (advanced lectures, seminars, colloquia etc) plus interactions with other members of their Team, in addition to the individual guidance provided by their Supervisors. They are also each assigned a Mentor (in a different Team) who keeps track of their progress and advises on professional development - appropriate Mentors are selected by the Co-ordinator in consultation with the Supervisors.

* Highlights on the development of particularly innovative approaches to training and ToK (e.g. specific training packages of Network-wide relevance)

The annual school has lectures by both astrophysical and particle cosmologists, thus enabling the students (who are roughly equally divided between the two categories) to appreciate the difference in perspective towards common problems in cosmology and the joint efforts being made by the two sides to arrive at satisfactory solutions.

* Highlights on the exploitation of the "complementarities" between Network participants with respect to training and ToK

Although the network involves mainly theorists, some of them are also involved with experiments

(e.g. Oxford participates in the Pierre Auger Observatory and IceCube). Similarly although most of the participants have a background in particle physics, there are also several astronomers/cosmologists involved. These complementarities are fully exploited in the annual training school which provides training in diverse subjects ranging from quantum field theory to interpretation of cosmological observations, and covers topics in both particle cosmology (theoretical issues concerning inflation, baryo/leptogenesis, dark energy etc) and astroparticle physics (experimental issues concerning dark matter, high energy cosmic rays, gamma-rays, neutrinos etc).

* Nature and justification for adjustments, if any, to the original training/ToK (e.g. opportunities for new collaborations regarding training activities)

None

* Nature and justification for adjustments, if any, to the original training/ToK (e.g. opportunities for new collaborations regarding training activities)

None

* Career development plans as elaborated by the ESR and ER involved in the project

These have been provided already for each ESR/ER. Please see attached at SESAM CDP's of our current fellows.

* Career development opportunities/prospects for ESR and ER involved in the project

All ESR/ER are encouraged to participate fully in the activities of the host department, especially in the organisation of seminars, journal clubs and conferences/workshops, in interacting with visitors and in outreach activities. ERs in particular can also be involved in supervising/evaluating undergraduate research projects and graduate teaching/problems classes. This varies from Team to Team as the nature of the host institutions is quite diverse, from specialised research laboratories to large universities - each provides specific opportunities for acquiring complementary skills. For example at CERN, the ESR are able to attend the renowned Academic Training Programme, learn French, advanced computing techniques etc. At Oxford University, both the ESR/ER can engage with the extensive academic activities of their host College in addition to those at the Department and at the University's Learning Institute which provides Postgraduate Skills Training for Mathematical, Physical and Life Sciences Division (e.g. networking, time management, mentoring and coaching - for full list see <http://www.learning.ox.ac.uk/>).

* Achievements regarding the acquisition of complementary skills such as communication, language skills, computer skills, project management, ethics, team building, etc.

Our ESR/ER have not specifically reported their "achievements" with regard to the acquisition of complementary skills but they are all engaged with diverse activities as outlined above. An illustrative example is that of Suchita Kulkarni who had only rudimentary knowledge of scientific programming before joining Bonn as an ESR. She has learned to organize rather lengthy analytical calculations, partly with the help of computer algebra and has written her own code to solve the Boltzmann equation governing the evolution of particle number densities in the early Universe.

* achievements regarding the training/ToK on specialised instruments/equipment

Not applicable

Management

Management

* effectiveness of the "internal" communication and decision making between the co-ordinator, team leaders, Supervisors, down to the ESR and ER, including feedback processes

Communication between the Co-ordinator and Team leaders was mainly through email and telephone. The annual network meeting provided an appropriate forum for open discussion both formally and informally between them as well as with other network members, in particular the ESR and ER appointed. If any problem arose with any of the appointed the ESR/ER, the appointed "Mentor" (in a different Team) was contacted to resolve the issues with the Supervisor/Team leader and the Co-ordinator,

* effectiveness of the communication between the Network and the Commission Services (frequency, efficiency, timely feedback), particularly regarding the conformance with contractual provisions and the implementation of contingency plans where needed

This was quite satisfactory since the Co-ordinator maintained close contact with the Scientific Officer in charge who provided advice and guidance when requested.

* Network self-assessment through benchmarking activities (exchange of best practices among participants and/or development of ad hoc performance indicators regarding cost management, staff selection, measurement of research/training/ToK outputs, young researchers' involvement, etc.)

This was done at the meeting of the Scientists-in-Charge during the mid-term review meeting.

* overall quality and efficiency of the "external" communication strategy of the Network (CORDIS; personal, team & Network web sites updates; newsletters)

The network website was constantly kept up-to-date with all relevant information by the Administrator. She posted all the ESR/ER vacancies on CORDIS, compiled and maintained mailing lists, provided help and advice to the ESR/ER and also produced several newsletters which were circulated to all UniverseNet members:

http://www.physics.ox.ac.uk/universenet/bulletin_july07.pdf

http://www.physics.ox.ac.uk/universenet/bulletin_april2007.pdf

<http://www.physics.ox.ac.uk/universenet/DecemberBulletin.pdf>

http://www.physics.ox.ac.uk/universenet/bulletin_spring2008.pdf

* Effectiveness of the recruitment strategy of the Network in terms of equal opportunities (including gender balance) and open competition at international level

All UniverseNet positions were widely advertised on popular websites for professionals (e.g. SPIRES and CERN job announcements) as well as on CORDIS, and circulated by email to cosmologists and astroparticle physicists worldwide. Applications from women were particularly encouraged. The effectiveness can be judged from the fact that typically 20-30 applications from well-qualified candidates were received for each position advertised. Moreover 6 of the 18 ESR/ER appointed so far are women, well above the average for this field. The selection process was transparent in that the application materials of all the short-listed applicants, along with the deliberations of the selection committee in each Team, were made available to the other Team leaders on the restricted access webpage. Since the same candidates had sometimes applied to different teams, this also enabled appointments to be made optimally according to local needs and interests by sharing information.

DEVIATIONS/MODIFICATIONS TO THE ORIGINAL WORK PROGRAMME

Please indicate if the project

a) is, at this stage, being implemented as originally planned

If you answered b) or c) please include a detailed description of the modifications in the report (one page)

ADDITIONAL INFORMATION

Please indicate any additional information, which may be considered useful to assess the work done during the reporting period.

Attachments	final_appendix5_participation_esr_er.pdf, final_appendix4_Outreach_2ndyear.pdf, final_appendix3_figures&tables_2ndyear.pdf, final_appendix2_publications_2ndyear.pdf, final_appendix1_ConferencesSchool_2ndyear.pdf
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