An Anisotropic, Non-Singular Early Universe Model

Pierre-Philippe Dechant

Astrophysics Group, Cavendish Laboratory, Cambridge University
UniverseNet - Poster session

September 22, 2008

An Anisotropic, Non-Singular Early Universe Model Leading to a Realistic Cosmology

- Pierre-Philippe Dechant, Anthony N. Lasenby, Michael P. Hobson: on the arxiv soon

An Anisotropic, Non-Singular Early Universe Model Leading to a Realistic Cosmology

- Pierre-Philippe Dechant, Anthony N. Lasenby, Michael P. Hobson: on the arxiv soon
- Biaxial Bianchi IX with scalar field matter

An Anisotropic, Non-Singular Early Universe Model Leading to a Realistic Cosmology

- Pierre-Philippe Dechant, Anthony N. Lasenby, Michael P. Hobson: on the arxiv soon
- Biaxial Bianchi IX with scalar field matter
- Pancaking solution with $R_1 \propto t$, $R_2 = R_3 \propto \mathrm{const}$, $\phi = \mathrm{const}$ through the 'Big Bang' at $t = 0$

An Anisotropic, Non-Singular Early Universe Model Leading to a Realistic Cosmology

- Pierre-Philippe Dechant, Anthony N. Lasenby, Michael P. Hobson: on the arxiv soon
- Biaxial Bianchi IX with scalar field matter
- Pancaking solution with $R_1 \propto t$, $R_2 = R_3 \propto \text{const}$, $\phi = \text{const}$ through the 'Big Bang' at $t = 0$
- No longer singular: curvature is bounded, (some) geodesics go through; parity inverted on 'the other side'

An Anisotropic, Non-Singular Early Universe Model Leading to a Realistic Cosmology

- Pierre-Philippe Dechant, Anthony N. Lasenby, Michael P. Hobson: on the arxiv soon
- Biaxial Bianchi IX with scalar field matter
- Pancaking solution with $R_1 \propto t$, $R_2 = R_3 \propto \mathrm{const}$, $\phi = \mathrm{const}$ through the 'Big Bang' at $t = 0$
- No longer singular: curvature is bounded, (some) geodesics go through; parity inverted on 'the other side'
- Model isotropises and inflates. n_s and r compatible with observations; low-ℓ dip; reasonably stable around biaxiality

An Anisotropic, Non-Singular Early Universe Model Leading to a Realistic Cosmology

- Pierre-Philippe Dechant, Anthony N. Lasenby, Michael P. Hobson: on the arxiv soon
- Biaxial Bianchi IX with scalar field matter
- Pancaking solution with $R_1 \propto t$, $R_2 = R_3 \propto \text{const}$, $\phi = \text{const}$ through the 'Big Bang' at $t = 0$
- No longer singular: curvature is bounded, (some) geodesics go through; parity inverted on 'the other side'
- Model isotropises and inflates. n_s and r compatible with observations; low-ℓ dip; reasonably stable around biaxiality
- Structure on the largest scales could have formed when the universe was still oblate