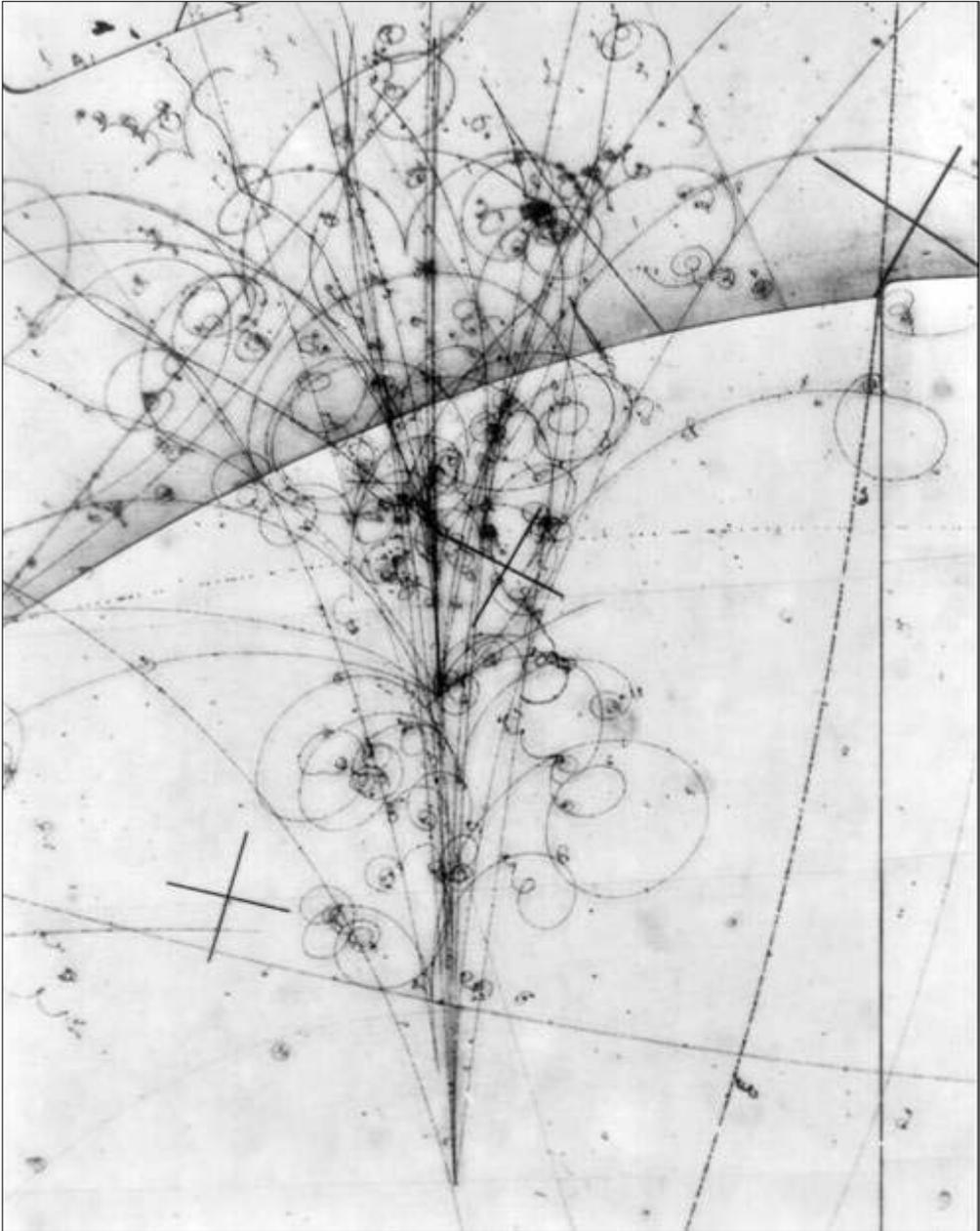# *BEBC*

This picture shows BEBC (Big European Bubble Chamber) surrounded by the array of multiwire proportional chambers that made up the External Muon Identifier (EMI). Muons created in neutrino interactions would normally penetrate the iron return yoke of the magnet and be detected in the EMI.

This is an example of a high energy neutrino interaction in the neon-hydrogen mixture. Because of the short radiation length, electrons loose energy rapidly and photons convert to electron-positron pairs.

Images from the film were projected onto scanning tables and a large team of operators searched for examples of neutrino interactions.
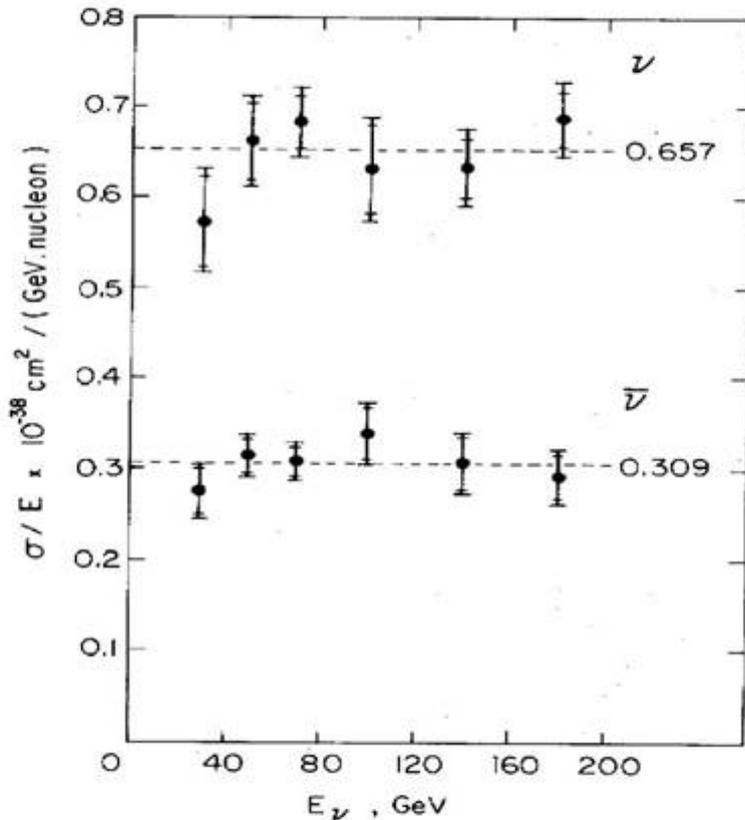
Neutrino and antineutrino cross sections divided by energy and converted to the values for an isoscalar target assuming $\sigma^{\nu}n/\sigma^{\nu}p = \sigma^{\bar{\nu}}p/\sigma^{\bar{\nu}}n = 2$. Total errors and the errors excluding the flux normalization uncertainty are shown.

The measured cross-sections continued to rise linearly up to the highest energies, indicating that the interacting particles had a point-like nature. Taken together, the data from high energy electron-positron inelastic scattering at SLAC and the neutrino experiments at CERN established $1/3$-integral charge for the nucleon constituents.
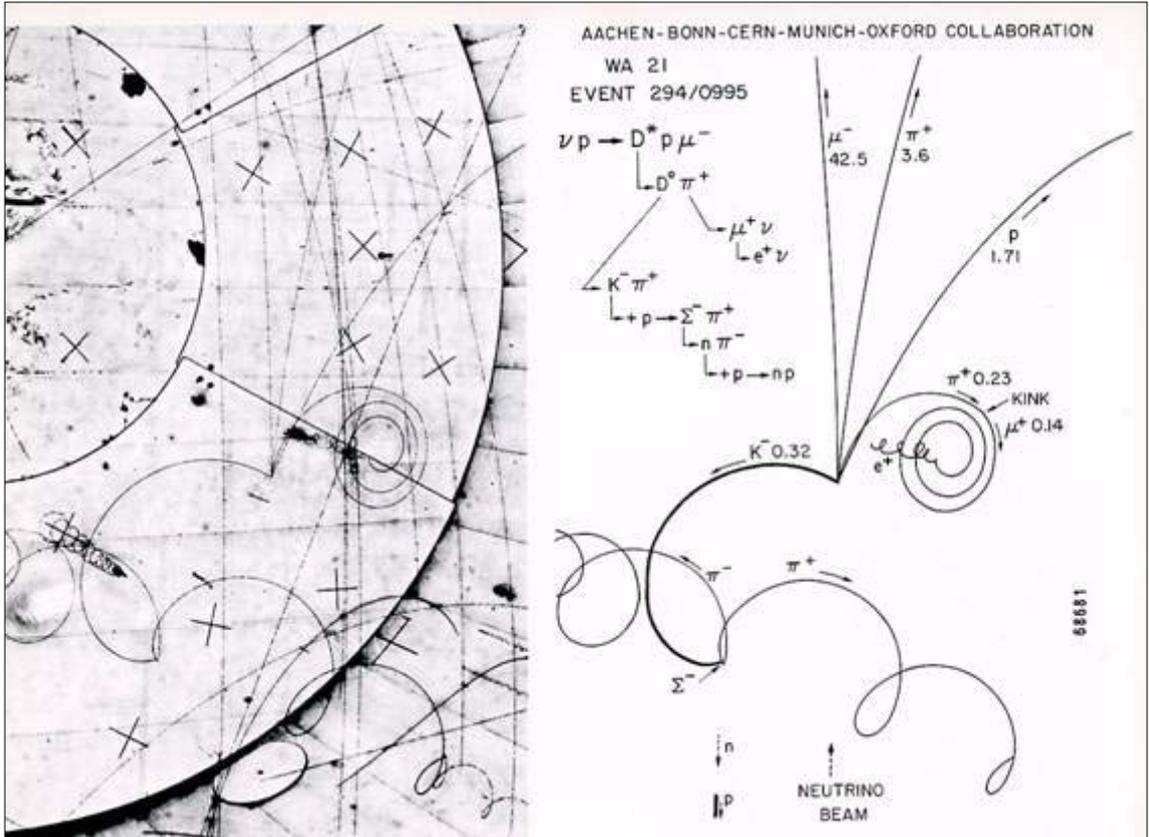
This unique event was found in the film scanned in Oxford. It is an example of the production of a charmed particle, in this case an excited state of the D-meson. All stages of the production and decay can be seen in remarkable detail.