



Contribution ID: 99

Type: Poster

## Pion condensation and chiral symmetry breaking in the early universe

*Wednesday 12 March 2025 17:42 (2 minutes)*

We discuss how the passage of the universe through a pion condensed phase and a chiral symmetry breaking would affect its cosmic trajectory at the QCD era. A pion condensed phase could be achieved if large lepton asymmetries were reached at this epoch. To describe the QCD sector we employ a quark-meson model at finite temperature and finite baryon and charge chemical potentials. We show that, for large lepton asymmetries, the universe could go through a first-order phase transition while entering the pion condensed phase, followed by a second order phase transition when it exits it.

**Authors:** FERREIRA, Osvaldo (Universidade Federal do Rio de Janeiro); S. FRAGA, Eduardo (Instituto de Física, Universidade Federal do Rio de Janeiro); HIPPERT, Mauricio (Universidade do Estado do Rio de Janeiro); Prof. SCHAFFNER-BIELICH, Jürgen (Goethe Universität)

**Presenter:** FERREIRA, Osvaldo (Universidade Federal do Rio de Janeiro)

**Session Classification:** Poster session