Contribution ID: **141** Type: **Talk**

65 (not 56) neutrinos per cubic centimetre

Tuesday, 3 September 2019 16:40 (20 minutes)

We revisit the clustering of relic neutrinos in the gravitational potential of the Milky Way. Previous work was based on forward-tracking of particles from high redshift. As the orbits of the neutrinos depend quite sensitively on their initial conditions, determining their density at a particular position, e.g. the sun, is however computationally inefficient. Consequently, the equations of motion could only be solved in a 1D, spherically symmetric approximation whereas both baryons in the Galaxy as well as the presence of the Virgo cluster break the spherical symmetry. Here, we present the results from a 3D modelling of the gravitational potential of the dark matter and baryons in the Galaxy as well as dark matter in the Virgo cluster. For the first time, we employ back-tracking of neutrinos and compute their phase-space density today through Liouville's theorem. We find that the baryonic contribution to neutrino clustering has been underestimated in 1D approaches and that the presence of the Virgo cluster further enhances the local density of relic neutrinos.

Primary author: MERTSCH, Philipp (RWTH Aachen University)

Co-authors: Dr GARIAZZO, Stefano (IFIC-CSIC/University of Valencia); LESGOURGUES, Julien (TTK, RWTH Aachen University); PARIMBELLI, Gabriele (SISSA, Trieste)

Presenter: MERTSCH, Philipp (RWTH Aachen University)

Session Classification: Parallel Sessions: Large Scale Structure (C.A.R.L., H09)

Track Classification: Large Scale Structure