

Perspectives in Astroparticle physics from High Energy Neutrinos



Monday, 25 September 2017 - Tuesday, 26 September 2017

Napoli

Scientific Programme

The event will develop over two days, starting at 9:00 and ending at 19:00 each day, with 2 coffee-breaks and lunch catered on site. The Social Dinner will take place in a nearby restaurant, in the evening of the first day.

The scientific program will include only plenary talks (about 30 in total) of roughly 20'+5' minutes each, and it will be organized in four sessions, as detailed below.

High-energy neutrino observations and perspectives

In this session, the current status of observational HE neutrino astrophysics and the perspectives of future investigations will be presented. The main focus will be the review of the collected data, making a link with possible interpretations both in terms of both standard and exotic astrophysical sources, and discussing the chances offered in the next future by new experimental campaigns. The relevance of possible alternative detection techniques will be also reviewed, mainly in connection with planned new experiments.

Astrophysical sources and backgrounds

In the session the astrophysical sources (galactic and extragalactic) expected to significantly contribute to HE neutrino observations will be reviewed. Characteristics of the acceleration mechanisms and features of the expected flux in terms of energy and direction will be analysed. The state of the art concerning the atmospheric background will be reviewed, paying particular attention to the remaining uncertainties on its prediction.

Multimessenger physics

The session will be devoted to the strong link existing among the emissions - and hence the observed fluxes - in different particle channels or gravitational waves (GW). The observations in the electromagnetic spectrum, both in space and ground-based, provide relevant constraints on the possible models underlying the observed HE neutrino flux. This topic will be reviewed together with a discussion on the possible correlation with UHECRs and GW.

New physics at high-energy neutrino telescopes

Present and future HE neutrino telescopes provide an interesting window on physics beyond the standard model. This gives a realistic chance to observe the effects of heavy relic particles or non standard interactions. The session will review the most relevant classes of models and the corresponding constraints achievable with present and future observations.