

Diffuse Neutrinos & Gamma Rays - Complementary Views on the High-Energy Universe.

Monday, 4 May 2015 14:30 (30 minutes)

Non-thermal processes in our cosmos have been studied for several decades through the observation of individual sources and diffuse emission in γ rays. However, the universe is transparent to γ rays only at MeV and GeV energies. Above 100 GeV, they are increasingly absorbed in interactions with the omnipresent radiation background from stars and the CMB. At TeV energies γ -ray observations are restricted to our local cosmic environment, at hundreds of TeV even to our own Galaxy.

Neutrinos fortunately do not have this limitation. They can travel cosmological distances and escape from dense environments without significant absorption. They are therefore our only direct probe of non-thermal processes above tens of TeV for most of the volume of our universe, and since their discovery by IceCube in 2013 available as an additional cosmic messenger.

I will review the current status of the observations of extragalactic γ rays and astrophysical neutrinos, followed by a discussion of what we can learn from these observations about the sites of cosmic-ray acceleration and the physics processes involved.

Primary author: ACKERMANN, Markus (o=desy-zeuthen,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Presenter: ACKERMANN, Markus (o=desy-zeuthen,ou=Institutions,dc=icecube,dc=wisc,dc=edu)

Session Classification: Diffuse Neutrinos & Gamma Rays - Complementary Views on the High-Energy Universe

Track Classification: Diffuse Neutrinos & Gamma Rays - Complementary Views on the High-Energy Universe, Markus Ackermann, DESY