



Contribution ID: 42

Type: **not specified**

Evolution of Dark Matter Halo Radio Emissions

Wednesday 24 September 2014 16:25 (15 minutes)

Dark matter remains a major gap in the understanding of modern physics with many proposed routes to direct and indirect detection. In this study we model the radio emission from neutralino annihilation in DM halos assuming various annihilation channels, a model of the magnetic field and an exploration of a range of redshifts. Using this model we provide estimates for the detectability of neutralino annihilation radio signatures via the SKA and derive upper bounds on the annihilation cross-section in the event of non-detection. We find that the strong constraints arise from dwarf galaxies, galaxies and galaxy clusters, all of these providing more stringent constraints than the relic abundance in the event of non-detection. We also determine the dependence of detectability on redshift and mass. Additionally we demonstrate that differing annihilation channels have distinct spectral signatures in the resulting radio emissions that could be observable with the future SKA.

Primary authors: Mr BECK, Geoff (University of the Witwatersrand); Prof. COLAFRANCESCO, Sergio (University of the Witwatersrand)

Presenter: Mr BECK, Geoff (University of the Witwatersrand)

Session Classification: Cosmology & Astroparticle Physics A