



Contribution ID: 316

Type: Oral

## Development of a Drift Chamber Detector for Large Area Applications of Muon Tomography

*Wednesday, 4 June 2014 17:40 (20 minutes)*

Cosmic ray muon tomography is a novel three-dimensional imaging technique able to image objects in dense or cluttered containers. The technique's ability to discriminate differing materials relies on the multiple Coulomb scattering of cosmic ray muons and as such depends strongly on the tracking resolution of the detector module. Similarly other detector properties have a strong effect of the technique's attractiveness for various applications: Due to the rate of background cosmic ray muons, timely imaging is only made possible by high detector efficiencies, large tracking solid angles and minimising dead areas; a low-cost, scalable, and easy-to-construct detector are also desirable properties, particularly for applications requiring large detector areas. We report on the development of a simplified single wire drift chamber for large area applications aiming to realise these benefits. Particularly we describe developments aimed at facilitating an easy-to-construct detector and reducing the overall cost of a future system. Performance studies of single and few-detector stack systems are reported including gas, resolution and efficiency studies. Then our considerations of a proposed design for a prototype detector module are also discussed.

**Primary author:** Dr STEER, Chris (AWE)

**Co-authors:** BURNS, Jonathan (A); Dr STAPLETON, Matthew (AWE); SNOW, Stephen (Dept.of Phys.& Astronomy, SchusterLab); QUILLSTEADT, Steve (AWE)

**Presenter:** Dr STEER, Chris (AWE)

**Session Classification:** V.a Industrial Liaisons

**Track Classification:** Technology transfer: 5a) Industry Liaisons