Contribution ID: **28** Type: **Poster Presentation**

Investigations with Gaseous Electron Multipliers for use on the ISIS spallation neutron source

Wednesday 14 September 2011 09:00 (1 hour)

Over the last few years several investigations have been undertaken to ascertain the suitability of gaseous electron multipliers (GEMs) for use as a neutron detector on the ISIS spallation neutron source. Our initial investigations focussed purely on whether these devices could be operated at the elevated pressure of 3He and CF4 necessary for 1mm position location (2.6 bars of CF4). In fact we were able to operate the GEMs at suitable gains with 3.5 bars of CF4. However encouraging these results were, we found that the GEM charged up over time, which we postulated was due to the kapton substrate. A similar problem was seen at the early stages of the development of the microstrip gas chamber (MSGC), a solution of which was to use the semiconducting glass Schott S8900 as the substrate. We then focussed our attention to the manufacture of a GEM structure on an S8900 substrate. Our first devices were manufactured from 1mm thick glass and exhibit gains in excess of 10000 for a single GEM stage in an argon isobutane gas mixture, when illuminated with 55Fe x-rays. A stable gain has been measured in a flowing gas mixture with the device simply tracking ambient conditions. Further measurements in a 3He:CF4 atmosphere will show how suited these devices are to the needs of ISIS.

Preferred medium (Oral/poster)

poster

Author: Dr DUXBURY, Dominic (Science and Technnology Facilities Council, RAL)

Co-authors: Mr SPILL, Edward (Science and Technnology Facilities Council, RAL); Dr SCHOONEVELD, Erik (Science and Technnology Facilities Council, RAL); Dr RHODES, Nigel (Science and Technnology Facilities Council, RAL)

Presenter: Dr DUXBURY, Dominic (Science and Technnology Facilities Council, RAL)

Session Classification: Poster Session