Poster session 1 - Monday 4 July

P1.088 **Light detection system simulations for SBND**

D Garcia-Gamez

University of Manchester, UK

on behalf of SBND collaboration

The Liquid Argon Time Projection Chamber (LArTPC) detectors are becoming the state of the art for neutrino detection and therefore play a major part in the US-based neutrino programme. LArTPCs detect primarily the ionization charge, but argon is also an excellent scintillator generating on the order of 40 000 photons per MeV of deposited energy. Until recently the scintillation light in liquid argon neutrino detectors has been mostly used as a source of trigger for beam and off-beam events, but it carries information that could be used to enhance the physics capabilities of these detectors. Newly designed short baseline experiments, in particular the Short Baseline Near-Detector - SBND, are putting significantly more focus on exploiting and developing the scintillation light capabilities of LArTPCs. This poster will describe the simulation constructed for the SBND experiment to develop new applications of using scintillation light in LArTPCs that would take them beyond the state of the art of current liquid-argon detectors. We will discuss the application of scintillation light to determine timing, position and energy of neutrino events in liquid argon.