Study of overlaid background events

To model the detector, beam, and cosmic backgrounds to pp collisions at ATLAS, we are able to overlay "random" data events on simulated high-pT pp collisions. But are these overlaid data events being used and reconstructed properly? What if a simulated track from the pp collision overlaps partially with a track from the overlaid data event? Does the simulation handle these more complicated cases correctly?

First, we would study samples of these overlaid data + simulated events and compare the reconstruction quality (resolutions, etc.) of the overlaid background event to simply reconstructing the background event on its own. Then, once we have determined that no major problems exist at that basic level, we can study more complicated cases of interfering background and pp collision particles (if time allows).