Space Science Seminar
Tuesday, 2014 August 26
10:30 a.m.
NSSTC/2096

Cosmic Backgrounds Due to the Formation of the First Super-massive Black Holes

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We observe i) a high energy neutrino background, and there are repeated claims of a radio background, ii) a large number of super-massive black holes, with a low mass cut-off in their distribution around 3×10^6 solar masses, and iii) a large number of massive disk galaxies that never merged. We propose that a first generation of super-massive black holes forms by the agglomeration of massive stars; the ensuing super-massive star blows up around 10^6 solar masses due to an instability, and forms a black hole. The explosion then produces a hyper-nova remnant, which gives rise to a background in radio emission, gamma emission, neutrino emission, matching the observations. This explosion distributes fairly strong magnetic fields. The explosion also produces a massive gaseous shell, allowing the formation of massive disk galaxies that never need to merge to grow. There has to be an ensuing background in polarized radio emission, as well as gravitational waves. This simple concept pulls together a large body of observational evidence, and allows predictions for future observational tests to be made.

http://solarscience.msfc.nasa.gov/colloquia/