

Why is the near-infrared sky so bright?

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The Origin of the Excess Near-Infrared Diffuse Sky Brightness: Population III Stars or Zodiacal Light?

The intensity of the diffuse 1 to 5 micron sky emission from which solar system and Galactic foregrounds have been subtracted is in excess of that expected from energy released by galaxies and stars that formed during the $z < 5$ redshift interval. The spectral signature of this excess near-infrared background light (NIRBL) component is almost identical to that of reflected sunlight from the interplanetary dust cloud, and could therefore be the result of the incomplete subtraction of this foreground emission component from the diffuse sky maps. Alternatively, this emission component could be extragalactic. Its spectral signature is consistent with that of redshifted continuum and recombination line emission from HII regions formed by the first generation of very massive stars. In this talk I will present the implications of this excess emission for our understanding of the zodiacal dust cloud, the formation rate of Pop III stars, and the TeV gamma-ray opacity to nearby blazars.

