

Title: Herschel Interstellar Dust Evolution Guaranteed Time Proposal

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Abstract:

Canadian participation in the Herschel Space Observatory interstellar medium (ISM) Specialist Astronomy Group (SAG-4) is discussed. Dust grain emission in the far-infrared to submillimeter, which dominates the Herschel spectral range, remains largely unknown. With its unique sensitivity, wavelength coverage, angular resolution and mapping efficiency, Herschel will be used to explore dust grain emission in a variety of conditions ranging from diffuse clouds to active star forming regions. Observations of extreme physical conditions such as high densities and intense radiation fields will be used to study ISM evolution. Herschel will serve to determine the role of dust particles on the evolution of the ISM. Importantly Herschel will allow the study of the physical conditions of the ISM to much smaller angular scales than the IRAS and DIRBE surveys. The SAG-4 program will contribute to a more quantitative understanding of the role of dust particle mass and composition in the physics and chemistry of the ISM.