

THE ORIGIN OF AGN-IR EMISSION

L. G. STENHOLM
*Astronomical Observatory
Uppsala University
Box 515
S 751 20 Uppsala
Sweden*

and

*Swedish Defence Research Establishment
S 172 90 Sundbyberg
Sweden*

Abstract. Advanced multi dimension radiative transfer calculations for an AGN source with a dust disk shows that the AGN-IR emission can be due to reradiation from heated dust in a thick disk. The models produces a weak silicate feature for a wide range of physical conditions, in agreement with the observations.

Key words: Radiative Transfer, Dust, IR, AGN

1. Summary

The AGN spectrum from IR to X-rays is included in the model. The model is divided in two parts a central engine producing the optical to X-ray emission and a disk of small single sized silicate grains. The radiative transfer is solved 3 dimensionally. The temperature structure is derived in the grey approximation and the spectrum is covered by 80 frequencies ranging from millimeter to X-rays. One model needs 20 to 30 CPU hours on a SPARC 2.

The models show that geometrically tick disks with inner boundary densities varying with at least two orders of magnitude and with varying radial dependencies, produces spectra which are in reasonable agreement with observed AGN. The silicate feature is weak due to a substantial optical thickness in the near-IR. The silicate feature varies little with the axilal angle of the line of sight, as long as disk volumes directly heated by the central source can be seen directly by the observer. This also coincidences with the angular range in wich the central engine can be seen without substantial obscuration.

2. Acknowledgements

This work was supported by the Swedish Natural Science Research Council.