

CO Line Emission from Nuclear Starburst Disks Around AGN

Poster #2

- Nuclear Starburst Disk Models of Ballantyne (2008)
- Molecular Mass Fraction Calculation from Pelupessy, et al. (2006)
- Ratran, a radiative transfer code by Hogerheijde & van der Tak (2000)

Three Classes of Model:

I. Starburst: Models having a region with a temperature exceeding 900 K and substantial star formation

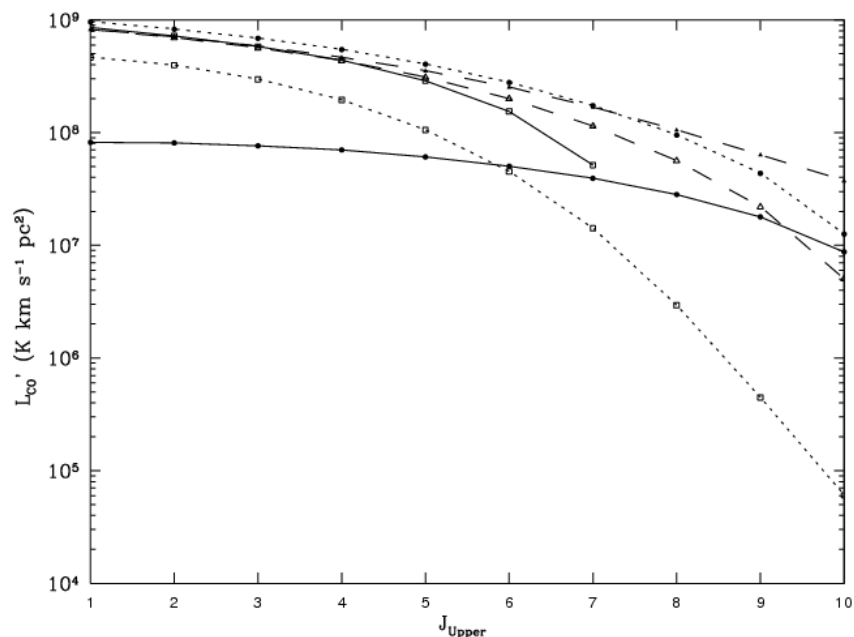
II. Borderline: Models having a region meeting the temperature requirement only

III. Failed: Models that have no region meeting either requirement

Results

☐ Starburst models are found to excite higher-J CO lines more effectively than failed models, resulting in higher brightness temperature ratios and in the value of J at which the flux SLED peaks increasing.

☐ Observations of CO SLEDs or line ratios for nuclear regions of AGN host galaxies could determine if the obscuring material in the Unified Model consists of a starburst disk.



Model Class	$R_{(3\text{ to }2)/(1\text{ to }0)}$	$R_{(6\text{ to }5)/(1\text{ to }0)}$	$R_{(6\text{ to }5)/(3\text{ to }2)}$
Total	0.71	0.25	0.34
Starburst	0.74	0.33	0.44
Failed	0.68	0.17	0.24
Borderline	0.76	0.35	0.45