nal X-ray emission. Our spectroscopic observations revealed that, in fact, a significant fraction of the identified optical counterparts are WTTS.

Here we discuss a sub–sample of the new WTTS in Orion for which we have both spectroscopic and photometric data. We also discuss the spatial distribution and the evolutionary status of these stars, and present an analysis of the relationship between X-ray emission and the physical properties (M_*, R_*, and L_*) of these WTTS.

DUST IN PRE-MS SYSTEMS: GRAIN GROWTH?

V. Mannings
Physics Department, Queen Mary and Westfield College, England

Dust grains associated with pre-main sequence low-mass (T Tauri) stars and intermediate-mass (Herbig Ae/Be) stars have been observed in submm continuum. Twin aims are to estimate total amounts of circumstellar material and to seek evidence for grain growth. Spectral fits to optically thin submm emission from DG Tauri, Haro 6-13 and DO Tauri suggest that circumstellar grain opacities ($\kappa \propto \lambda^{-0.6}$) fall off much more slowly with increasing wavelength than is found for grains in the interstellar medium, a result also indicated by preliminary analysis of submm photometry of the Herbig Ae system HD 163296. Such low opacity indices might be indicative of the accumulation of grains. Absolute values of both the grain opacity and the total mass of material cannot be separated out using model fits alone; however, such fits can yield useful constraints on the appropriate opacity scaling when considered in combination with mass accretion rates inferred from integrated bolometric luminosities. In this way, the submm photometry of the T Tauri systems provides a lower limit to the mm/submm opacity of $\kappa \geq 0.003\ [1100/\lambda(\mu m)]^{0.6}$ [cm^2 g^{-1}], with corresponding disk masses being up to a few tenths of a solar mass. A rough estimate of the 2 mm opacity of the outer regions of the compact continuum source in HL Tauri suggests κ(1100 μm) $\sim$ 0.03 [cm^2 g^{-1}]. It is interesting that such an opacity scaling would, if applied directly to the disks in DG Tauri, Haro 6-13 and DO Tauri, still imply disk masses which are in excess of the minimum-mass solar nebula. If the grains in HD 163296 are also distributed primarily in the form of a disk, then the implied total mass of gas+dust is $\sim$ 0.19 $M_\odot$. The shallow submm opacity law for this Herbig Ae system indicates that, as for the T Tauri circumstellar environments, it is possible that grains might be comparatively evolved.

RADIO CONTINUUM, AMMONIA AND WATER MASER OBSERVATIONS OF BRIGHT UNASSOCIATED *IRAS* POINT SOURCES

Mari Paz Miralles[1,2], Luis F. Rodríguez[1], and E. Scalise[3]

We present matching-beam 6 and 2-cm radio contin uum observations made with the Very Large Arra and ammonia and water maser observations made a the Haystack Observatory of 12 *IRAS* point source selected from the survey of Scalise et al. (1989, A&A 221, 105) of bright, unassociated *IRAS* point source These sources have 60 or 100 μm flux densities in ex cess of 10^3 Jy and have no previous reference in an of the 37 catalogs considered for association of *IRAS* sources with known sources. Six of the twelve source have associated radio continuum, ammonia and wa ter maser emission and all of them show at least on of these three emissions. In all sources detected, th ammonia is warm (T$\sim$ 20 K) and suggests the asso ciation of dense molecular gas with embedded heat ing sources. It is argued that all sources in the sampl could be associated with time-variable H_2O maser emission. The radio and far-infrared data appear t indicate that these sources are star-forming region powered by a late O or early B-type star. Several o the sources of lower luminosity ($\sim 5 \times 10^3\ L_\odot$) ap pear to have ionizing photon fluxes *in excess* of thos expected for a ZAMS star. Possible explanations fo this discrepancy are discussed.

[1] Instituto de Astronomía, Universidad Nacional Au tónoma de México.
[2] Universidad Complutense de Madrid, Spain.
[3] Instituto de Pesquisas Espaciais, Brazil.

KINEMATICS OF THE GALACTIC SUPERNOV REMNANTS RCW 86, MSH 15-56, AND MSH 11-61

P. Ambrocio and M. Rosado
Instituto de Astronomía
Universidad Nacional Autónoma de México
E. Le Coarer
Observatoire de Grenoble, France
and
M. Marcelin
Observatoire de Marseille, France

We present radial velocity fields of the optical coun terparts of three supernova remnants (SNRs): RCW 86, MSH 15-56 and MSH 11-61, obtained from scan ning Fabry-Perot interferometer observations at Hα.

The kinematical distances, expansion velocities ages, energies and phases of evolution are obtained