New M dwarf debris disk candidates in NGC 2547

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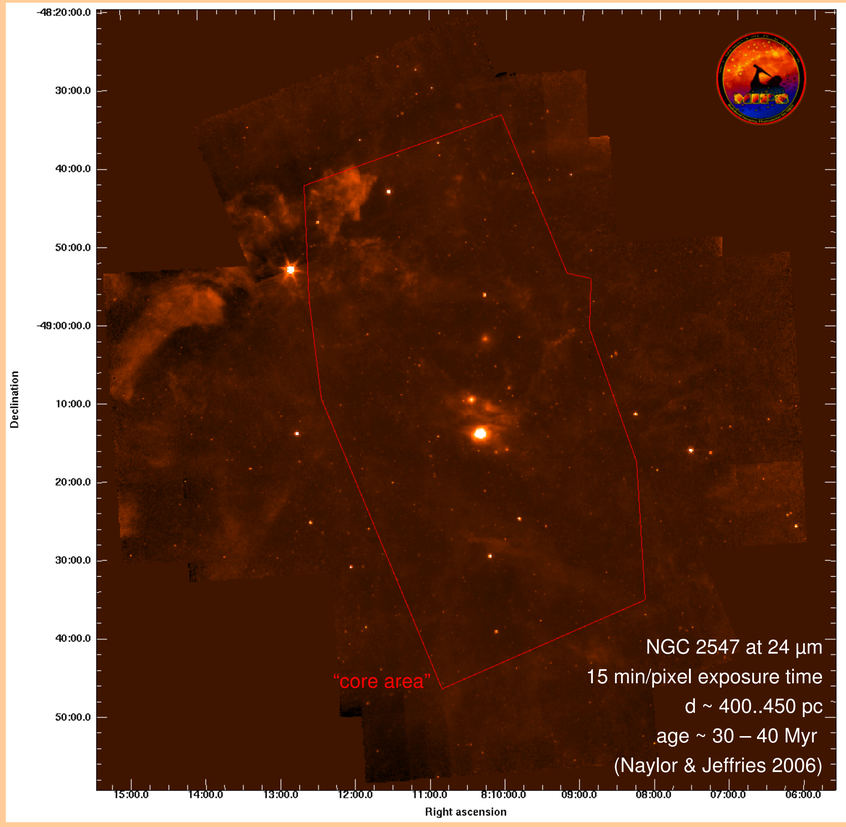
1. M dwarfs are plentiful, but there are few known examples of M dwarf debris disks, even though we know M dwarfs hosting extrasolar planets.

2. Two M dwarf debris disk candidates were found in NGC 2547, using *Spitzer*-MIPS24 (Young et al. 2004, Gorlova et al. 2007).

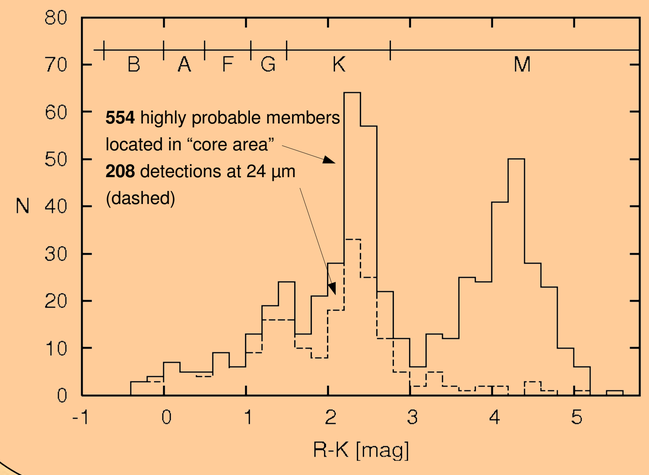
3. In order to see whether only the tip of an iceberg was detected in NGC 2547, we used a more sensitive *Spitzer*-MIPS24 dataset (10x longer) to search for excess emission toward "highly probable members", as defined by Gorlova et al. (2007).

4. NGC 2547, as seen by *Spitzer*-MIPS24.

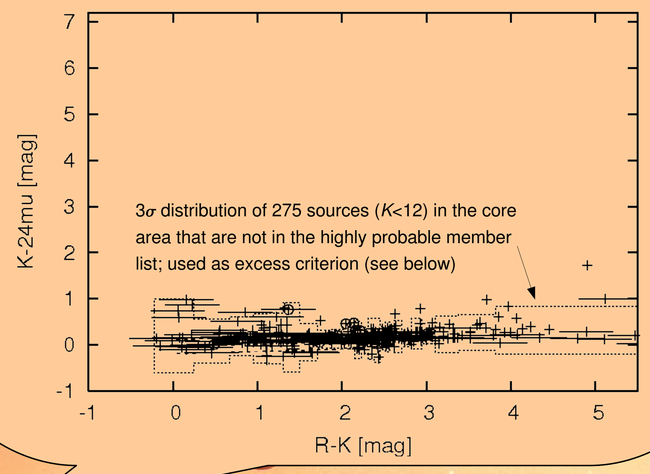


The red polygon denotes the most sensitive part of the image ("core area"), the part that we searched for excess sources.

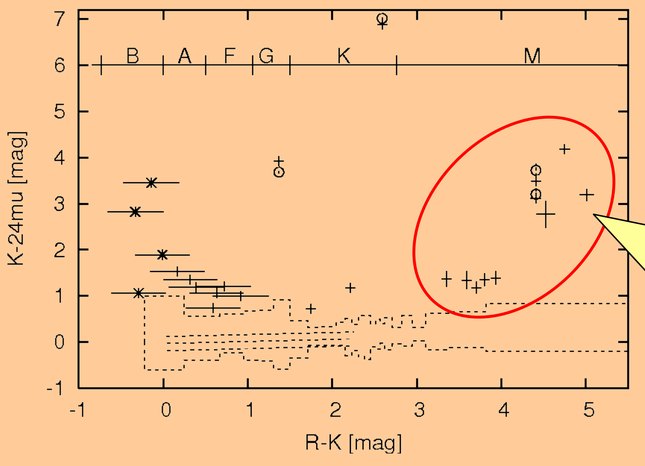
5. Histogram of detected members by spectral type



6. A conservative excess criterion: excluding non-members in color-color space



7. Members with excess outside the exclusion zone



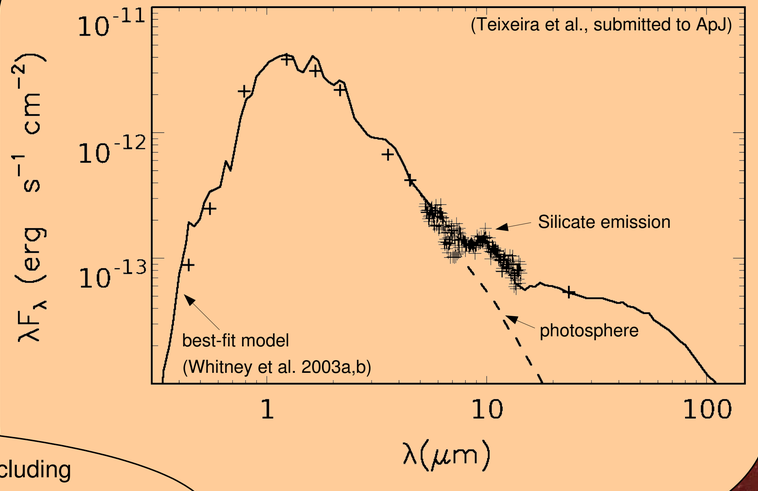
Circles denote previously known sources and asterisks denote sources within extended emission.

8. We identify eleven M dwarf debris disk candidates, nine of which were not previously known.

The 24 μm excess emission probes thermal material at orbital radii of only ~**0.5 AU** (estimated as a blackbody with an SED peaking at 24 μm, in orbit around a star with 0.01 solar luminosities). At a temperature of 120 K, this region is close to the "**snow line**".

Dust removal processes, most notably the Poynting-Robertson drag, operate on timescales of at most a few million years, much shorter than the age of the cluster (>30 Myr). **We thus argue that these sources are likely debris disks, suggesting that planet formation is under way in these systems.**

9. Source 23: the most complete SED of the sample



10. For a more detailed discussion, including an argument why 30 Myr might be a good age to observe M dwarf debris disks, see Forbrich et al. 2008 (ApJ 687, 1107), astro-ph/0807.3597.

Boo!

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