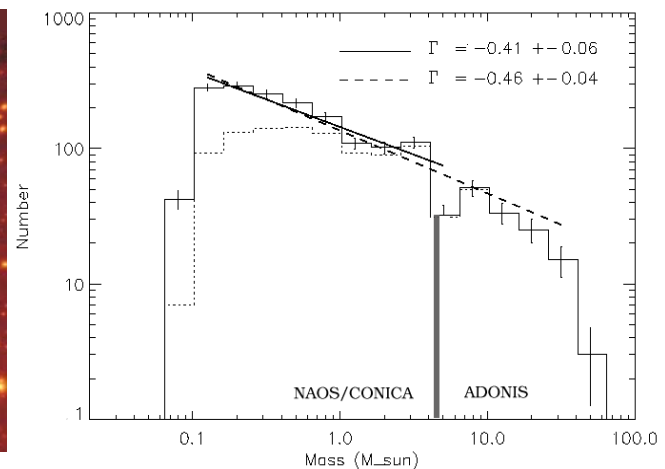
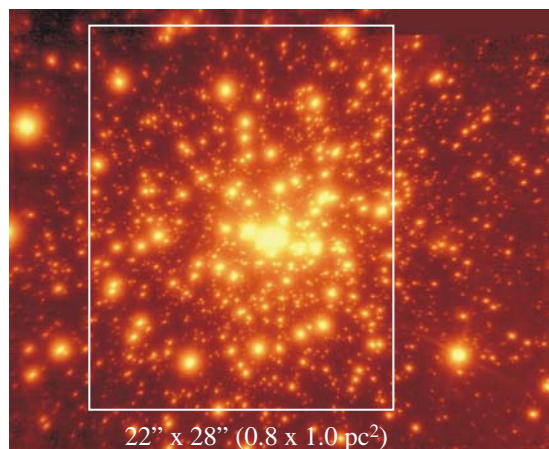


One of the major unsolved problems in the understanding of starformation is the question, if the Initial Mass Function (IMF) varies with the physical conditions in the starforming region. In particular we want to test the hypothesis that starbursts form proportionally fewer low-mass stars than typically observed in more quiescent regions. We have thus started a program to measure the IMF in a sample of the most massive starforming regions in our Galaxy. Here we present the results for NGC 3603. Our adaptive optics observations at the VLT allow us for the first time to measure the IMF down to approx. 0.1 Msun. The measured IMF is significantly flatter than for the field stars. Our results thus support the hypothesis that the starformation in starbursts is biased towards higher mass stars.



The left figure shows the K-band image of the central star-forming cluster HD 97950 in NGC 3603. The total observing time on source is approx. 13 minutes. The faintest stars seen in the observations have a magnitude of approx. 20 mag, corresponding to stars with masses around the Hydrogen burning limit. The white box indicates the region for which we have analysed the IMF. A similar observing time has been spent on J- and H-band imaging of the same region. From the distribution of the stars in the color-color and color-magnitude diagrams we derive a cluster age of approx. 1-3 Myr. We have then calculated the IMF by applying various theoretical models for the pre-main sequence evolution of high, intermediate, and low mass stars. The right figure shows the resulting IMF (Harayama & Eisenhauer, 2005). The power law index is  $\sim -0.4$  in the mass range from 0.1 Msun up to 6 Msun. There is no truncation towards low stellar masses, confirming that NGC 3603 indeed forms a significant number of stars with masses close to the Hydrogen burning limit (Eisenhauer et al. 1998, Brandl et al. 1999). However, the measured IMF is significantly flatter than for the field stars (Salpeter IMF has a slope of -1.35), indicating that the starformation in NGC 3603 is biased towards higher mass stars. Our finding thus adds major evidence to the hypothesis of a “top-heavy” IMF in starbursts and a non-universal IMF.

**Reference:** Brandl et al. 1999, A&A, 352, L69  
 Eisenhauer et al. 1998, AJ, 498, 278  
 Harayama & Eisenhauer 2005, “IMF@50” Conf., in preparation