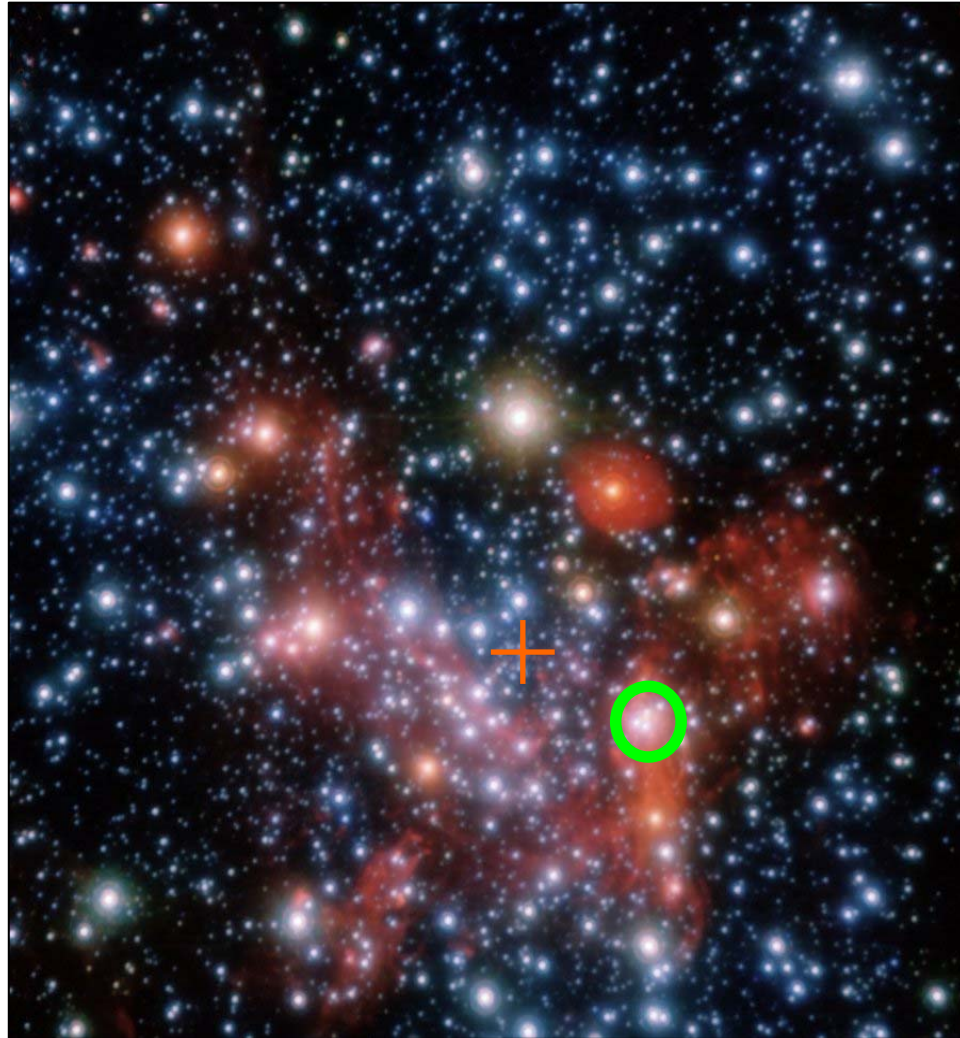# GC-IRS13E- A puzzling association of three early type stars
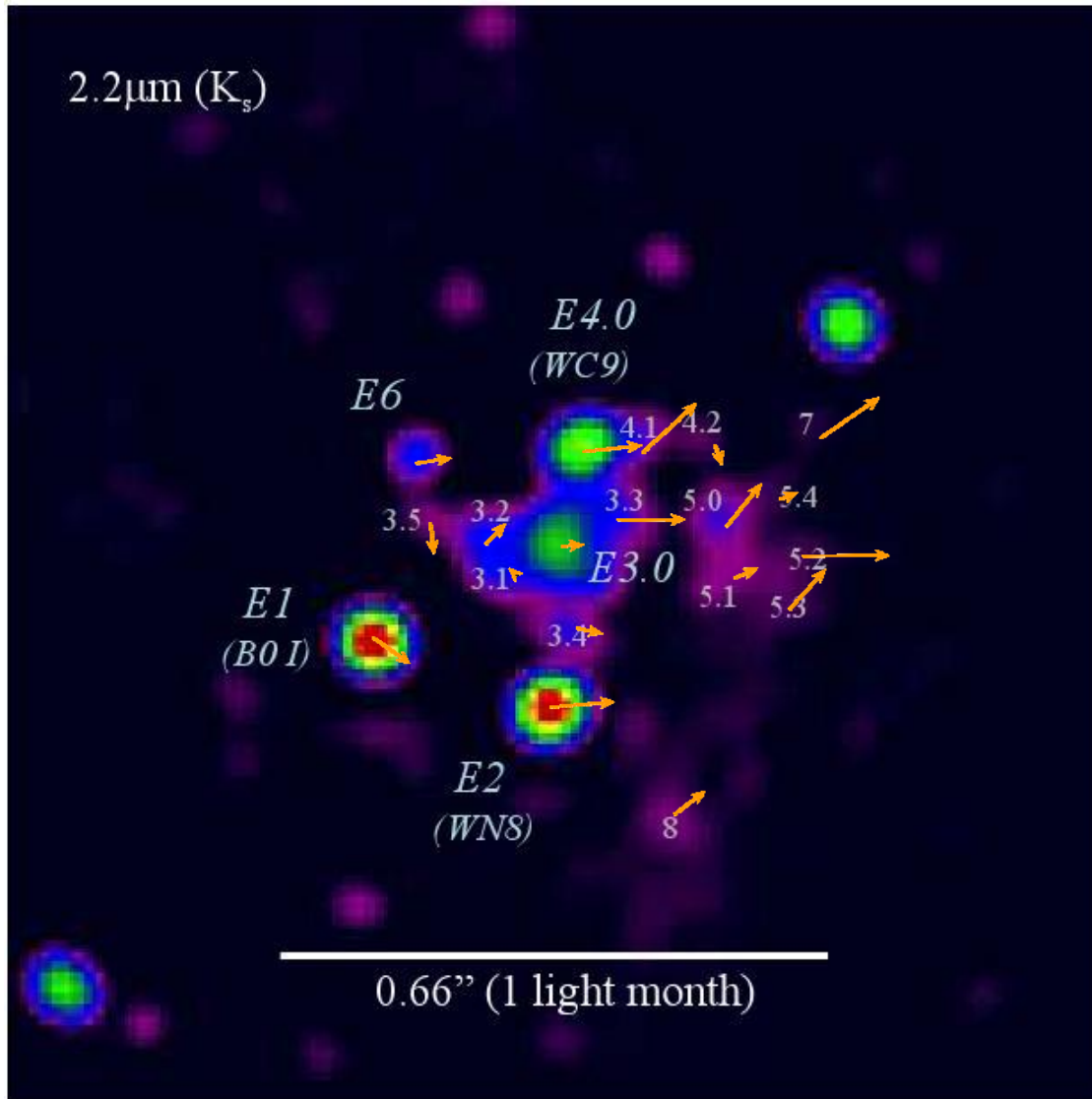

25¨~1pc

IRS13E

3.5'' to Sgr A*

T.K. Fritz, S. Gillessen, K. Dodds-Eden, F. Martins, H. Bartko, R. Genzel, T. Paumard, T. Ott, O. Pfuhl, S. Trippe, F. Eisenhauer, D. Gratadour
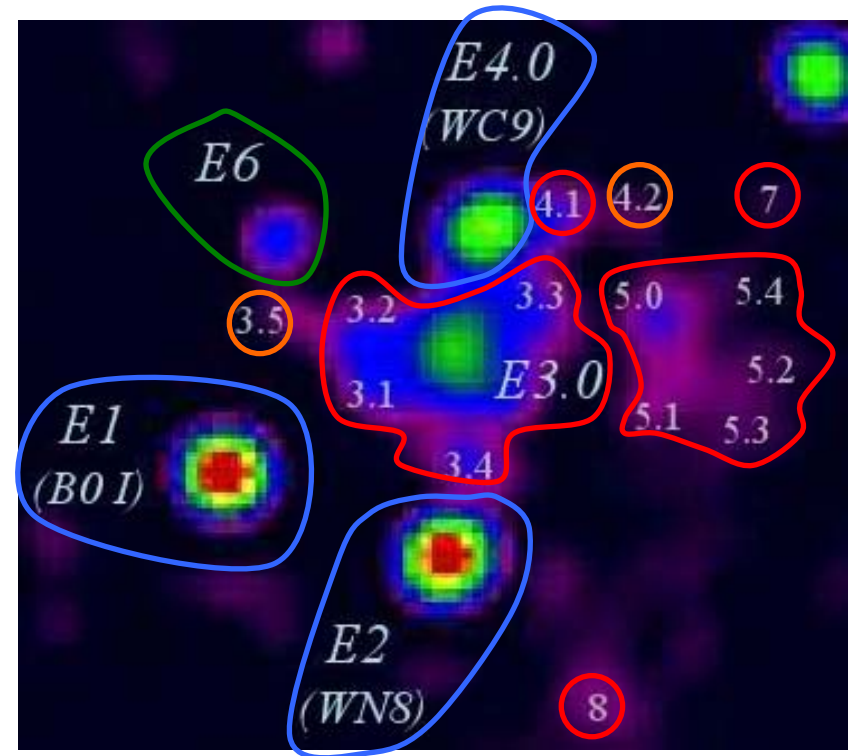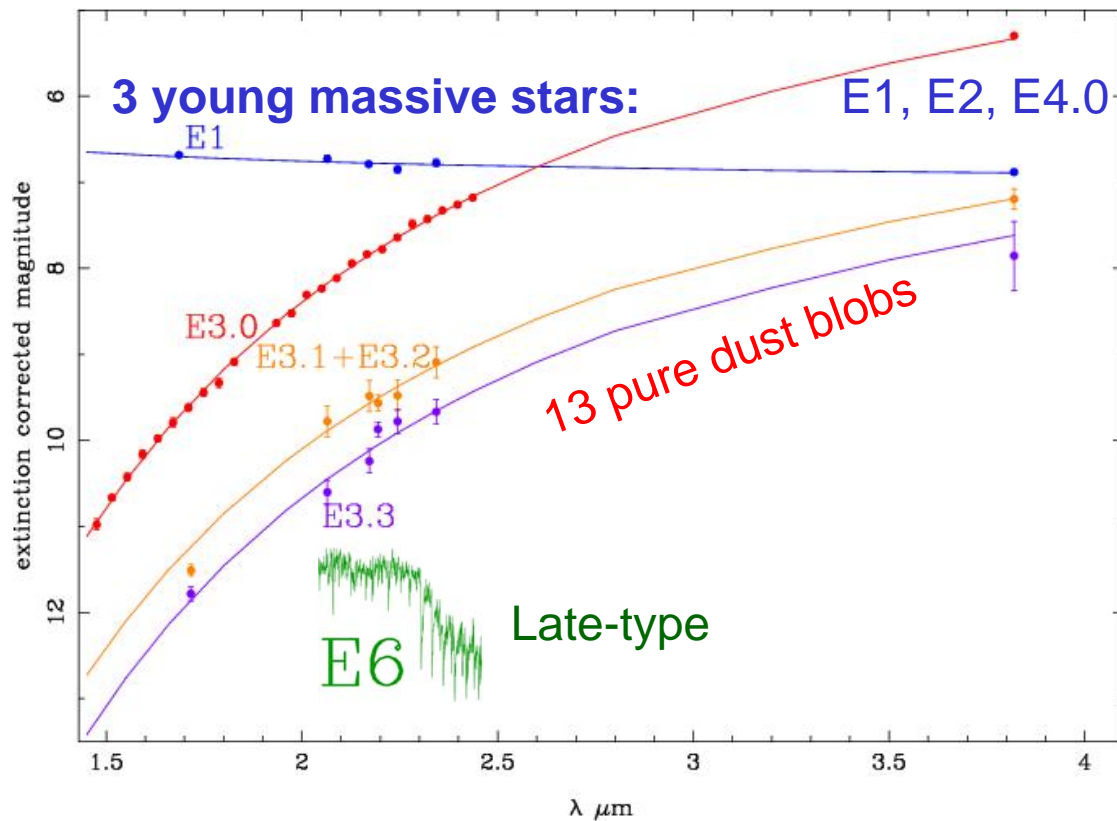
A cluster of 19 stars?

Deconvolved NACO/VLT image

19 sources with proper motions (2002 to 2009)

SED-fitting: Most objects are dust blobs

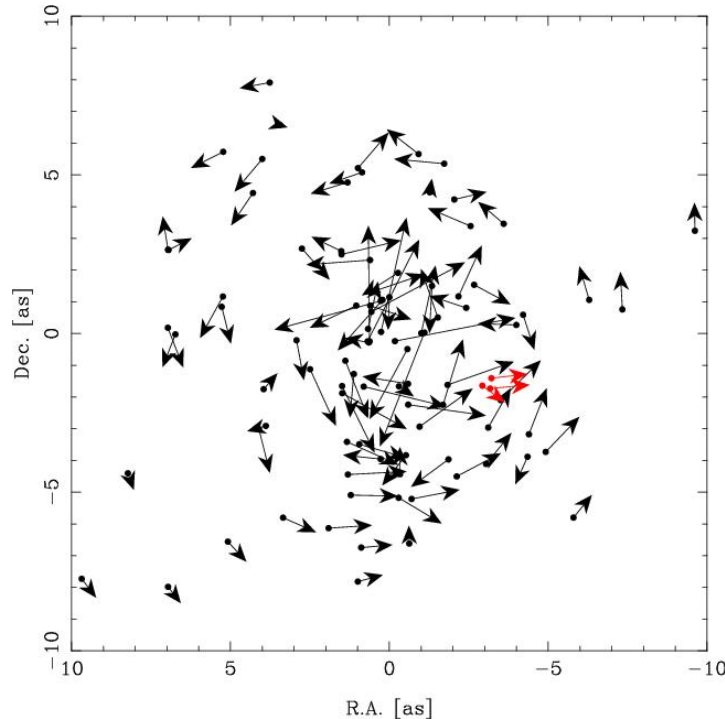**3 young massive stars:**   E1, E2, E4.0

13 pure dust blobs

Late-type

2 faint stars are expected from background

What is the nature of the association of three young stars?

Chance association:

How likely is IRS13E as chance association in phase space given the **early-type stars outside** (Bartko09) of IRS13E?

Cluster with intermediate mass black hole:

IMBH (M~20000 solar masses) necessary for binding the stars.

How likely is an IMBH given the **acceleration limits** of the stars and **the radio motion** of Sgr~A* (Reid04)?

Probability~0.2%

Probability~0.4%

Summary

13 of the 19 objects in IRS13E are dust clumps. Only three are young stars.

GC-IRS13E-A puzzling association of three early-type stars