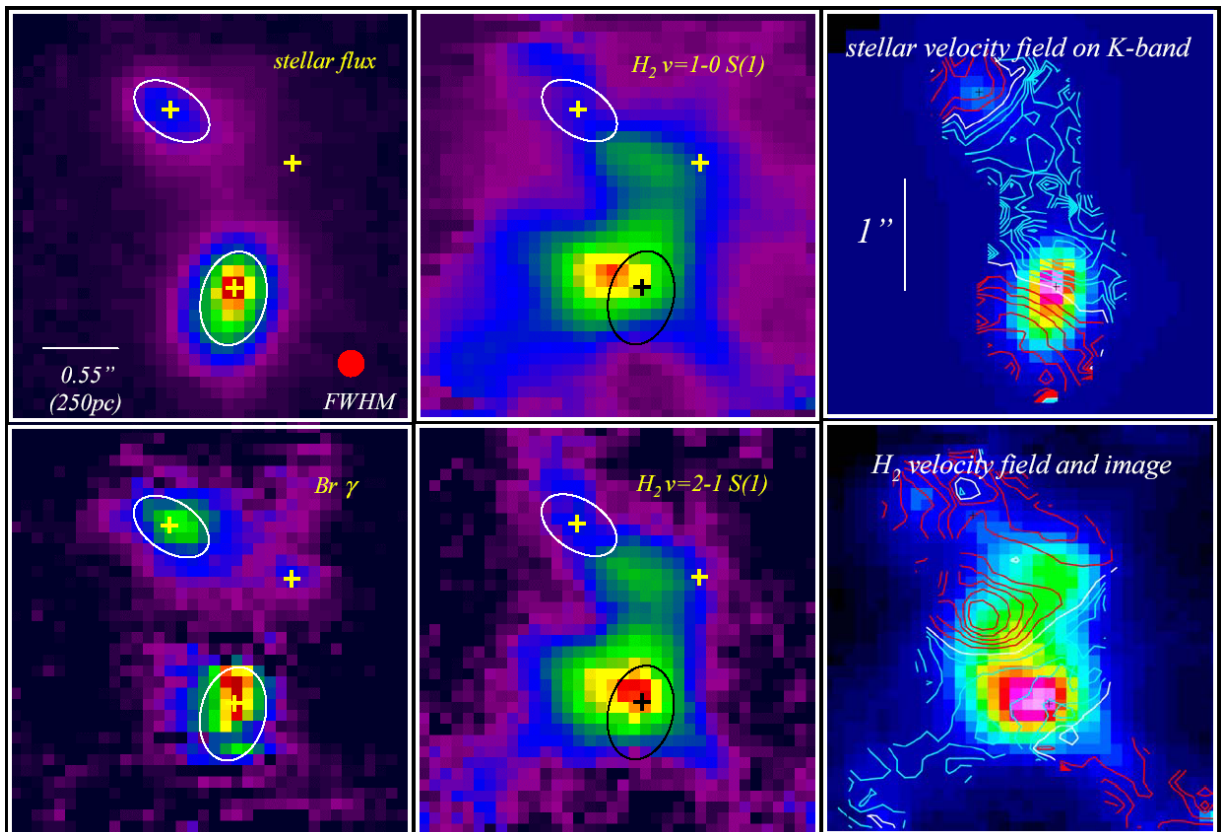


NGC 6240 is in many ways a prototype of the class of gas-rich, infrared luminous mergers. The system has two rapidly rotating, massive bulges/nuclei at a projected separation of $1.6''$ (750pc), each of which contains a powerful starburst and a luminous, highly absorbed X-ray active AGN. NGC 6240 is also the most luminous local source of ro-vibrationally excited H_2 line emission. Most of the starburst activity (as traced by $\text{Br}\gamma$) occurs in the two nuclei on scales of 200pc , although there appears to be one extranuclear source in the gas bridge between the nuclei. The vibrationally excited H_2 emission is very different and follows a complex spatial and dynamical pattern. The H_2 kinematics are extremely complex and very different from the relatively simple counter-rotating pattern of the stars. The gas bridge is redshifted relative to the nuclei and exhibits a very steep velocity gradient as it curves around towards the southern nucleus, where it appears to crash into the nuclear regions. From the bright H_2 peak just NE of the southern nucleus two gas streamers emerge and envelop the southern galaxy. This pattern resembles the gas bridges found in situations of gas rich mergers after the first peri-approach – we may be observing the two galaxies after the first hang-out phase in the process of falling back. H_2 spatial distribution, kinematics, and level populations strongly favor a galactic shock model as the origin of the spectacular H_2 emission.



SPIFFI images, stellar and H_2 kinematics of the luminous merger galaxy NGC 6240, as observed with $0.1''$ pixels and $0.27''$ spatial resolution during SPIFFI guest instrument observations in spring 2003. In all images the positions of the two nuclei and an extra-nuclear $\text{Br}\gamma$ source are marked.

References:

- Eisenhauer, F., et al. 2004, *Astron. Nachrichten*, 325, 120