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**DEEP H $\alpha$  IMAGES OF INTERACTING GALAXIES**

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**I.Introduction and Motivation**

Gravitational interactions between galaxies are believed to increase star formation activity dramatically, and most of the brightest starburst galaxies show clear signs of recent interactions. However, it is still not known how interaction triggers star formation, nor are there models to relate the type or strength of interaction to the location or amount of star formation. We report here on a series of deep H $\alpha$  images of interacting and post-interaction galaxies which we took with the purpose of finding the young stars and ionized gas in these objects. We were motivated in part by the hope that by studying the very recently formed stars we could see how the interaction process had affected the star formation.

**II. The Sample**

The galaxies selected show clear signs of having been through strong interactions. Most have III plumes, filaments or tails, which are thought to be evidence for close interactions or actual mergers. We paid particular attention to the M81-M82-NGC3077 group because of Ho and Hun's detailed HI study which showed how HI is being transferred between the galaxies, to NGC 2782 because of its beautiful recently discovered HI plume, and to NGC 5253, although HI information is not available, because it is thought to be interacting with M83 and the two of them are candidates for the youngest starbursts known.

**III. Observations and Results**

We observed the galaxies through 50 Å-wide filters, one on the redshifted H $\alpha$  line and one off, and a standard R filter. Depending on the galaxy and conditions, images in the B,V, and I filters were also obtained. The images were recorded with a 4x7' or 17' diameter CCD at the 1-meter telescope of the Wise Observatory in Mitzpe Ramon.

The H $\alpha$  and continuum images are used, together with observations at other wavelengths, to put together as complete a picture as possible of star formation and interactions in each galaxies. The complete observation set is not yet available for all the galaxies but certain results are already clear. There do not seem to be any correlations between HI and H $\alpha$  structures. In some III plume galaxies H $\alpha$  extensions were seen on the other side of the galaxy from the III; in others extensive H $\alpha$  filaments have been found but not HI. The preliminary results agree with the simplest model that interaction-induced star formation will be concentrated in the system center, since that is where the mass ends up.