

ARP 142:*Another Interacting Galaxy with Very Large Internal Motions?*

C.M. MCCAIN, K.C. FREEMAN AND P.J. QUINN

*Mt. Stromlo & Siding Spring Observatories**Private Bag, Weston Creek PO, Weston, ACT 2611, Australia***1. Introduction**

We present our study of Arp 142, an interacting system which consists of irregular (NGC 2936) and spheroidal (NGC 2937) components. We discovered that NGC 2936 has very high internal motions, much higher than what is expected from the dynamics of interaction of such galaxies.

2. Discussion

NGC 2936 has a long dust lane extending towards its companion, however in K-band images the dust lane disappears and the chaotic irregular looks more like a double-armed face-on distorted spiral. Still, one can see matter being stripped off from the spiral due to its interaction with NGC 2937.

Velocities calculated from the $H\alpha$ and [NII] emission lines give a total internal velocity of about 1000 km s^{-1} contained inside the chaotic component. This velocity spread is much larger than one might expect from the dynamics of interaction of such galaxies. Our K-band magnitude and the Tully-Fisher law indicate that the expected internal velocity spread for NGC 2936 should be $\lesssim 500 \text{ km s}^{-1}$.

Hardly any $H\alpha$ and [NII] emission is seen from the nucleus of NGC 2936 but outside about $5''$ (2.5 kpc), the emission lines are double- or triple-peaked with velocity differences of up to 400 km s^{-1} , and with unequal strengths. This may suggest the existence of an ionisation cone around the nucleus, although the [NII] $\lambda 6583/H\alpha$ ratio does not indicate that shocks are important here, which is usually the case for these cones. The velocity contours averaged over the multiple peaks are like those of a distorted but rapidly rotating disk.

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