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OBSERVATIONAL RESEARCH OF THE CANDIDATES FOR THE POLAR RING GALAXIES

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The results of the kinematic analysis of stars and gas components for three candidates for the Polar Ring Galaxies (Whitmore et. al 1990) UGC5600, NGC6286 and UGC4892 are presented.

Analysis is carried out on the base of the integral field observations with MPFS spectrograph at the 6m telescope of SAO RAS (http://www.sao.ru/~ gafan/). We construct the map of the radial velocity field and velocity dispersion distribution of stars and gas and reveal the motion of these components.

The photometric study (Karataeva et.al 2001) has shown that **UGC5600** is a late type spiral galaxy (Scd) with possible inner polar ring. The isovelocity contours (Fig.1a) correspond to the circular motion of the stellar disk around the minor-axis of the galaxy. However, non-circular motion perhaps exists at the central region ($r \leq 2''$). The isovelocities of gas (Fig.1b) are turned by about 90° from the stellar ones. According to this fact and the shape of H_α isophotes the gas belongs to the inner ring and rotates around the major-axis of the galaxy. The angle between the disc of galaxy and the ring is about $78° \pm 5°$.

The main body of **NGC6286** is a spiral galaxy seen almost edge-on and crossed by a bent dust lane. A diffuse semi-ring extends from SE edge of the galaxy. The behavior of the isovelocity contours gas for and stars corresponds to circular rotation around the galactic minor axis. The velocity fields obtained by the H_α and [NII] lines demonstrate the velocity difference. It is about 20 km/s in the center and 40 to 60 km/s at $r < 5''$ to SW.

UGC4892 has complicated structure. In the center two bright compact regions are observed ("A","B" - on the Fig.1c,1d). The external isophotes are practically boxy, with weak remnants of spiral arms. At "A-region" the stellar isovelocity contours (Fig.1c) are going in the N-S direction and correspond to rotation around the axis with position angle $PA = 0°$. At $r \sim 3''$ from the center the isovelocities turn around about 90° roughly. It seems that two kinematic systems rotating around different axes exist there. The radial velocity field of the gaseous component (Fig.1d) has a more regular structure. It indicates main rotation about E-W-direction (that corresponds to the major-axis of the galaxy). The behavior of the gas isovelocity contours at the B-region shows the opposite rotation to the stars. The character of the motion of the gaseous component demonstrates that the gas in the observed region has already started to interact with the northern galaxy and moves in orbits close to polar.

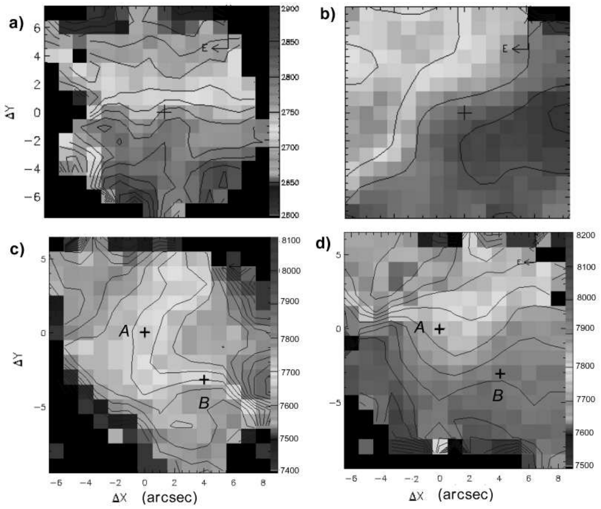

Fig. 1. The velocity fields of star (a) and gas (b) for UGC560 and (c) and (d) for UGC4892 respectively. N is top, E is to the left. The gas velocity fields are obtained for the H_α line

Conclusion. We confirm that the discussed objects are on different stages of interaction. UGC5600 has already formed an inner polar ring. UGC4892 evidently presents merging of two galaxies. Galaxy NGC6286 probably is on the stage of polar ring formation. The analysis of the motion of stars and gas in the central regions of these galaxies reveals a lot of peculiarities connected with the interaction.

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