MODELING GAS AND STELLAR KINEMATICS IN DISC GALAXIES

NGC 772, NGC 3898, and NGC 7782

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We present $V-$band surface photometry and major-axis kinematics of stars and ionized gas of three early-type spiral galaxies, namely NGC 772, NGC 3898 and NGC 7782. For each galaxy we built a self-consistent Jeans model for the stellar kinematics, adopting the light distribution of bulge and disc derived by means of a two-dimensional parametric photometric decomposition. This allowed us to investigate the presence of non-circular gas motions, and derive the mass distribution of luminous and dark matter in these objects. We found that the observed gas rotation corresponds to the circular velocity except for the innermost region ($|r| \lesssim 8''$) of NGC 3898. This behaviour is quite common, although not ubiquitous, in the few bulge-dominated galaxies, for which dynamical modeling allows the comparison between the gas velocity and the circular speed. The mass is essentially traced by light in NGC 772 and NGC 7782, where gas rotation velocities were observed out to 0.2 R_{25} and 0.6 R_{25}, respectively. For NGC 3898 we succeed in reproducing the observed gas rotation velocities, which extends out to 0.7 R_{25}, only taking into account the presence of a massive dark halo.

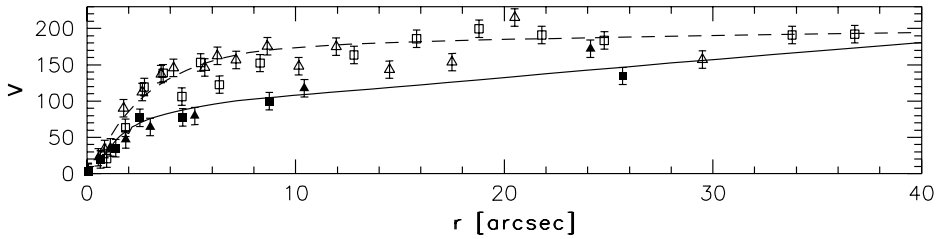

Figure 1. Gas (*open symbols*) and stars (*full symbols*) rotational velocities for NGC 772, against the model circular (*solid line*) and rotational (*dotted line*) velocities.

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