Astronomy with the WSRT

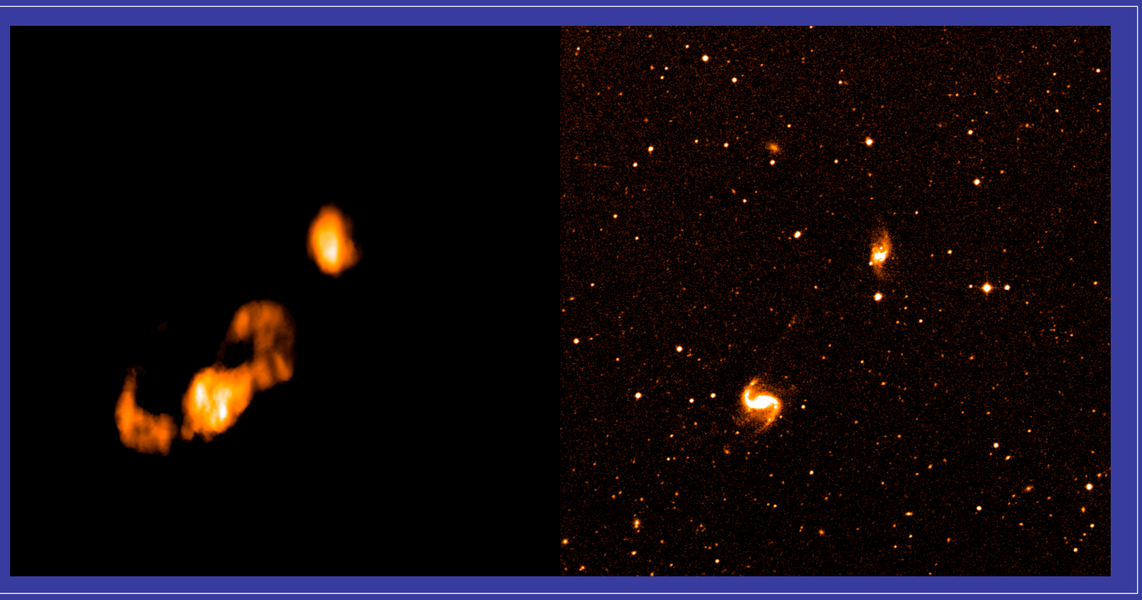
Gas and Stars of Interacting Galaxies

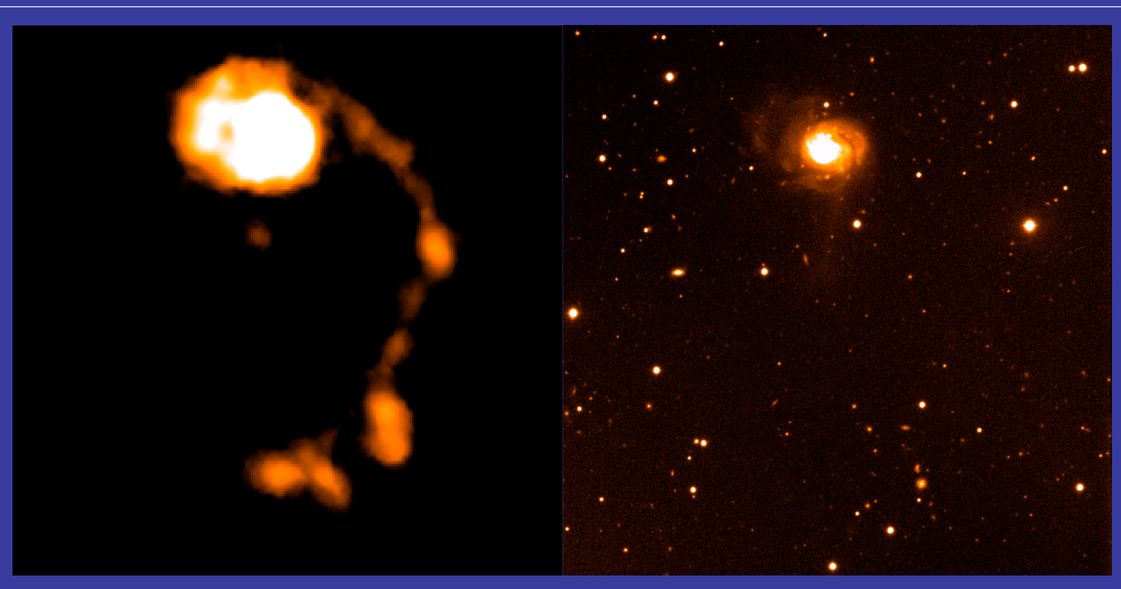
Galaxies are not isolated in the Universe. Often they form pairs or groups and clusters. Because they move around within the groups, it can happen that two galaxies come close together or even collide and merge. Such events have a big influence on the galaxies: the disks of gas and stars are disturbed and do not look like a spiral any longer. New galaxies can even be formed by such an incident. Often, a lot of new stars are made during the close passage or merger of two galaxies.

A galaxy can also interact with the gas that fills the space between galaxies, the intergalactic medium. In this case, only the gaseous spiral might be affected and look distorted. The infall of intergalactic gas can lead to enhanced star formation in the galaxy.

The poster shows 4 examples of galaxy interaction. The stars are shown on the right part of the pictures, the left part shows the gas which was observed with the WSRT. The sizes of the optical and HI pictures are the same. Note that the gas is much more extended than the stars!

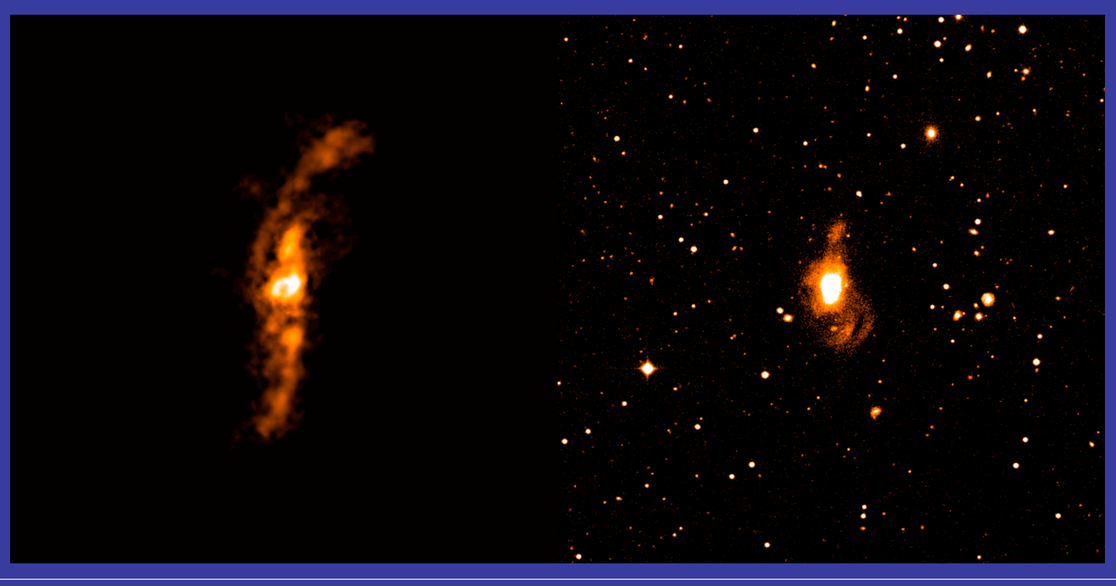
The picture show the interacting pair NGC 4016 and NGC 4017. The two spiral galaxies are disturbed due to a close encounter. The interaction is even more visible in the gaseous component. In particular the disk of the left galaxy formed two large hooks. The two galaxies might collide in some 100 million years and will end up looking like objects like those below.

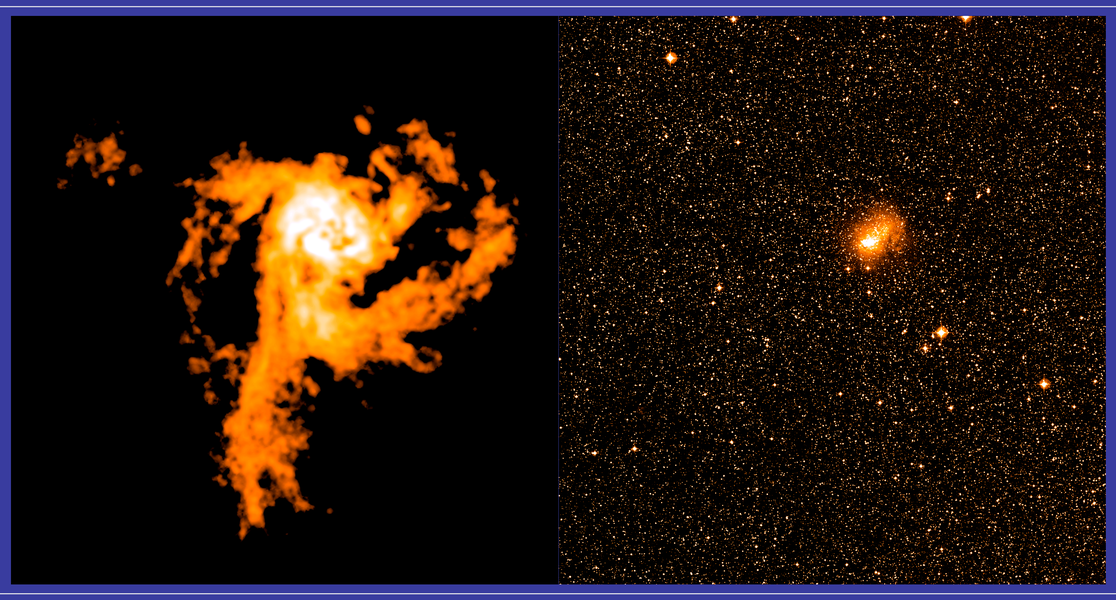




This picture shows the remnant of a collision of two galaxies. The stellar disk of the merger remnant NGC 5607 has still a few disturbed spiral arms. The gas has formed a huge tail during the encounter of the two merged galaxies. It is possible that small galaxies will form in the clumps at the end of the tail.

Here you see the merger remnant NGC 4441. During the collision two gaseous tails were formed. The stars also formed tidal features like a small tail and two shells. They are, however, much smaller than the gas tails and have a different structure.





In this picture the gas and the stars of the nearby dwarf galaxy IC 10 are shown. The HI is much further extended than the stellar body and forms several tails and blobs far away from the center.
We don’t know yet why the gas is so distorted. Maybe the dwarf galaxy collided with another galaxy. Or perhaps gas from the intergalactic medium is falling onto IC 10 and forms the filaments.

ASTRON

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