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Progress Report: LOFAR observation of NGC 4631

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I will present the current status of the main part of my PhD project, the LOFAR observation of NGC 4631. NGC 4631 is a large edge-on spiral galaxy with high star formation rate and strongly interacts with NGC 4627 and NGC 4656/7. NGC 4631 also exhibits a large, prominent halo of warm and hot ionized gas. NGC 4631 has been observed as part of the LOFAR Survey of nearby galaxies with the LOFAR HBA for 6.4 hours during Cycle 0 (2013-04-18/19), using the Core and Remote Stations. This talk covers improvements of direction-dependent over direction-independent calibration, experimentation with Factor parameters and facet setups and first glance analysis of the current processing stage image. The LOFAR image of NGC 4631 shows lots of diffuse emission outside the disk, correlating nicely with previous X-ray and radio observations. Furthermore, due to the huge improvement in resolution over previous measurements, fine structures are discernible in the halo, e.g. filaments can be traced up to 10 kpc out of the disk. The talk may also include a quick look at NGC 4656, one of NGC 4631's interaction partners which is also in the field of view of another facet of the observation.

Summary

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