

Title

Environmental Effects in the Merging Subcluster M49

Abstract

M49 is among the most massive galaxies in the nearby universe and currently in the process of merging with the Virgo cluster. This gives rise to a prominent tail of stripped hot gas visible in the X-rays. Recently, two extended tails were also detected in the radio. While one tail is fully coincident with the X-ray tail, the second one corresponds to an ancient X-ray cavity. M49 presents a prime laboratory to disentangle the various processes at work (ram pressure stripping, buoyancy, AGN-feedback). The sharp contrast between these two tails may be due to their different magnetic field strengths and structures or different radiative ages. Here, we propose a 7.5 h observation in the UHF-band to characterize its magnetic fields, merger dynamics and AGN-activity history using polarization analysis and spectral aging modelling. We stress that the proximity of M49 would allow us to perform these measurements with a detail and resolution that is not achievable with any other object.