

Title: Dwarf galaxies with active galactic nucleus

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Abstract: This masters's thesis deals with star-forming dwarf galaxies with an enhanced X-ray luminosity based on the predictions from star-formation processes. We constructed a sample of dwarf galaxies observed with the SDSS telescope in optical light and with the ESA XMM-Newton observatory in X-rays. We compared different methods to predict the X-ray luminosity from star formation processes and compared it to the observed values. We investigated whether the X-ray excess is related to any physical properties of the studied galaxies, such as stellar population, metallicity or specific star formation rate, or can be attributed to active galactic nucleus. We also processed the first X-ray observations of 7 Blueberry galaxies, which are analogues of high redshift galaxies. We found, that their X-ray luminosities are lower than expected, with only 1 source having an X-ray excess, 1 source being detected and for the rest only the upper limits could be constrained. We discuss possible sources for the measured X-ray excess in the dwarf galaxy sample, as well as the implications of the Blueberry galaxies being under-luminous, especially for the early universe.

Keywords: Dwarf galaxies, star formation, active galactic nuclei