

The first sky surveys in parts of the spectrum different than optical has taken us into the new age of observing the Universe which could not be seen before. In the ultraviolet range we have observed the birthplaces of the new stars while in the infra-red we could see dust covering these areas. Because of that, in the world of galaxies, a new type galaxies were found, extremely luminous in the infra-red part of the spectrum, with much dust, and a strong stellar formation - (Ultra) Luminous Infra-red Galaxies (abbreviated as (U)LIRGs). These objects are also characterised by possession of an Active Galactic Nucleus (abbreviated as AGN). Further observations and analysis of these objects shown, that most of them is in a state of merger, or have just finished it.

Many years of research of (U)LIRGs did not provide satisfactory explanation of their nature. It is a fact that most of this objects reside on higher redshifts and not so many of them are in the local Universe. Unfortunately their properties are being investigated on samples (mainly local) identified on the northern sky. The precise mechanism responsible for their extraordinary infra-red luminosity is still not known. It is still a matter of debate whether for their rarity a local environment is responsible or it might be in the nature of this type of objects.

In this project we plan to acquire and analyse data from the photometric observations in the optical spectrum and local density calculations for 25 from 39 (U)LIRGs identified in the Akari Deep Field – South survey. We also plan further analysis based on calculated physical parameters and another observations (both photometric and spectroscopic) for the whole ADF-S field.