

Seminarium Astrofizyczne

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Multi Wavelength Dissection of a Dying Ultra-Massive Ultra-Dusty Galaxy at $z \approx 2$

When the Universe was adolescent (at a redshift of $z \approx 2$), it contained a large density of very massive galaxies with intense star formation activity. This epoch of the Universe in particular, also known as the cosmic noon, marks the peak of the star formation rate density.

In the context of galaxy evolution, the observation of such star-forming galaxies is crucial to our understanding of the progenitors of elliptical and passive galaxies that we observe in the local Universe. Important questions arise: why galaxies formed more stars at higher redshift? And why this activity seems to quench around $z \approx 2$?

In the COSMOS extragalactic field, benefitting from a wealth of ancillary data (from X-ray to radio), two galaxies at a redshift of $z \approx 2$ are studied using multi wavelength data. One of them is very massive (10 times the Milky-Way) and ultra-dusty, hence its UV to optical light is strongly absorbed. However, this galaxy is very luminous in IR and is detected by ALMA in submillimeter, making it possible to study its gas component and to trace the molecular gas. The detection of this galaxy is serendipitous, obtained thanks to the detection of a less dusty and less massive satellite galaxy that is visible in the optical range.

Using spectral energy distribution of the massive galaxy and deriving its gas content will allow us to understand if the gas reservoir is sufficient to explain its vigorous star formation activity and to investigate if this activity is stable or already on the decline.

Serdecznie zapraszam,
Agnieszka Majczyna