

Invited lecture

SCORPIO AT THE 6-M TELESCOPE: CURRENT STATE AND PERSPECTIVES FOR SPECTROSCOPY OF GALACTIC AND EXTRAGALACTIC OBJECTS

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Significant part of observations at the Russian 6-m telescope is carried out using multi-mode focal reducer SCOPRIO. Lot of scientific data have been collected using observations in the direct imaging, slit spectroscopy and Fabry-Perot interferometry modes during past ten years. Some results of these observations are considered in this review. Also we present a short description of new generation instrument SCOPRIO-2 (SCORPIO-New).

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EXTRAGALACTIC FIR/SUBMM SPECTROSCOPIC RESULTS FROM THE HERSCHEL SPACE OBSERVATORY

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The far-infrared and submillimetre (FIR/submm) window is amongst the least explored spectral regions of the electromagnetic spectrum. It is, however, one of the most interesting regions to study the interstellar medium of both the Milky Way and other galaxies. Most of the emission in the FIR/submm region is thermal continuum emission from interstellar dust. However, it also contains thousands of emission and absorption lines tracing the neutral, ionized and molecular phases of the interstellar medium.

We present new spectroscopic results on galaxies in the nearby and high- z universe, based on observations taken with the Herschel Space Observatory. In nearby galaxies, FIR/submm observations can trace various transitions of mainly CO and H₂O and enable us to map the conditions of the dense interstellar medium. [CII] line observations in nearby, low-metallicity dwarf galaxies indicate a missing phase of the interstellar medium that can be connected to the dark gas recently detected by Planck. In the high- z universe, mm follow-up observations of Herschel detected ULIRGs (and in particular, lensed high- z ULIRGs) prove to be a unique way to trace not only the redshift, but also the conditions in the interstellar medium.