Multi-Object Spectroscopy in the Next Decade: Big Questions, Large Surveys and Wide Fields
Santa Cruz de La Palma, Canary Islands 2-6 March 2015

MOSAIC: a Multi-Object Spectrograph for the E-ELT

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Abstract

The instrumentation plan for the European-Extremely Large Telescope foresees a Multi-Object Spectrograph (E-ELT MOS). A European-wide consortium (P.I. GEPI) got together to propose a MOS facility for astrophysics, IGM studies and cosmology.

The science cases (summarized in a white paper by Evans at al. 2015) range from spectroscopy of the most distant galaxies, mass assembly and evolution of galaxies, via resolved stellar populations and galactic archaeology, to planet formation studies.

A further strong driver are spectroscopic follow-up observations of targets that will be discovered with the James Webb Space Telescope.

The consortium proposes MOSAIC, a MOS-instrument that is based on two previous concepts, OPTIMOS-EVE and EAGLE. It foresees three observing modes:

- a high-definition mode (HDM), enabled by Adaptive Optics correction modules, featuring 10 IFUs with spatial pixel sizes of 75 mas in the near-infrared.
- a high-multiplex mode (HMM) with a multiplex of 200 apertures and a wavelength coverage from 0.4 to 1.8 microns at two resolving powers.
- an Inter-Galactic Medium mode (IGM) with 10 IFUs for optical spectroscopy.

This poster presents the current concept of the MOSAIC instrument and its capabilities to address the top level science cases.