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MAVIS - A new facility instrument for the ESO VLT Adaptive Optics Facility

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MAVIS (MCAO Assisted Visible Imager and Spectrograph) is a new facility instrument for the ESO VLT being built by an Australian (Astralis - lead), Italian (INAF) and French (LAM) consortium. MAVIS pushes the frontier of new instrument technologies to provide, for the first time, wide-field, diffraction-limited angular resolution at visible wavelengths. Enhancing the VLT Adaptive Optics Facility, MAVIS will use multi-conjugate adaptive optics (MCAO) to feed a 4k × 4k imager covering 30 × 30 arcseconds, as well as a powerful Integral Field Spectrograph (IFS). Angular resolution down to 18 milliarcseconds will be achieved at 550 nm (V band), making MAVIS a powerful complement to infrared-optimised facilities like JWST and ELT. The IFS will provide four spectral modes, with resolutions from 4,000 to 15,000 between 370-935 nm. This enables a wide variety of science cases, spanning themes that include the emergence of the Hubble sequence; resolving the contents of nearby galaxies; star clusters over cosmic time; and the birth, life, and death of stars and their planets. MAVIS builds on the success of MUSE Narrow Field Mode at the VLT, extending to bluer wavelengths and higher spectral resolution (complementing BlueMUSE), larger field size and angular resolution for imaging capabilities, and dramatically higher AO-corrected sky coverage, including most of the sky. I will present an update on the MAVIS project and science, highlighting its complementarity to the suite of ESO capabilities in the coming decade.

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