The era of collaborative multi-wavelength and multi-messenger astronomy: science and technology



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Next-generation optical facilities in the multi-messenger era: the SOXS case

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SOXS (Son Of X-Shooter) is a spectrograph for the ESO NTT telescope, capable to cover the optical and nIR bands, based on the heritage of the X-Shooter at the ESO-VLT. SOXS will be built and run by an international consortium, carrying out rapid and longer-term Target of Opportunity requests on a variety of astronomical objects. SOXS will observe all kind of transient and variable sources from different surveys and satellites. These will be a mixture of fast alerts (e.g. gamma-ray bursts, gravitational waves, neutrino events), mid-term alerts (e.g. supernovae, X-ray transients), fixed time events (e.g. close-by passage of minor bodies). The design foresees a spectrograph with a Resolution-Slit product ~4500, capable of simultaneously observing over the entire band the 350-2050 nm spectral range. The limiting magnitude of R_AB-20.5 (1 hr at S/N~10) is suited to study transients identified from on-going imaging surveys. Light imaging capabilities in the optical band (grizy) are also envisaged to allow for multi-band photometry of the faintest transients.

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