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Surveys in TeV Astronomy with Cherenkov telescopes in a multi messenger and multifrequency context

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Extragalactic TeV astronomy with Cherenkov telescopes is synergistic with multi-frequency and multi-messenger observations, conducted through observational campaigns or triggers (target of opportunities).

We will outline these two main directions by presenting recent results from multifrequency observations of blazars, such as the quasi-periodic PG1553+113, and by discussing the prospects for TeV observations of transient sources, gravitational wave counterparts, and gamma-ray bursts. In this context, we will also show how Cherenkov telescopes, specifically the next generation Cherenkov Telescope Array Observatory (CTAO), can benefit from and contribute to future surveys like the Rubin Observatory's LSST. A dedicated INAF in-kind project will enable multiwavelength analysis through the cross-matching of high-energy events with LSST data.
The CTAO will also conduct its own extragalactic survey. When complemented by surveys or dedicated observations in other frequency domains, the CTAO surveys promise an unbiased and comprehensive exploration of the spectral energy distribution parameter space of AGN and blazars.

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