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Optical identifications of celestial high energy sources with the Telescopio Nazionale Galileo

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To ascertain the nature of celestial high energy sources, it is crucial to identify their optical counterparts. However, the currently available astronomical public optical databases do not provide an adequate support for a systematic high energy sources identification work. In particular, the optical limiting magnitude represents a severe limitation since the deepest flux limits reached by X-ray surveys require of course similarly deeper optical catalogs to homogeneously sample the available parameter space.

Nonetheless, dedicated spectroscopic campaigns are being carried out successfully with the Telescopio Nazionale Galileo (TNG), a 4-m class telescope. To set up a winning observational campaign, the first and most important step is to define a strong science case, as it will allow for selections of good targets for observations: the key is to increase the identification efficiency while keeping down the required telescope time.

In this context, as the Principal Investigator, I will give an overview of the first spectroscopic campaign carried out at the TNG to identify Swift X-ray serendipitous sources, and I will show the valuable results achieved with only one night of observations.

As a second example, I will review the strategy for the northern-sky classification of candidate blazars associated to unidentified Fermi gamma-ray sources, and I will show the results coming from the related observational campaigns at TNG I have been involved during the last two years.

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