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Mini-HAWKs, a pilot survey to unveil dormant black holes

Mini-HAWKs is a 50 sqr deg pathfinder of the Galactic Plane down to r⊠21 that employs 3 custom Hα filters, optimized to select targets with very broad Hα emission lines. These are the hallmark of strong gravitational fields as they are typically formed in accretion discs around black holes (BHs). Mini-HAWKs will prove a novel photometric strategy that, when extended to the entire northern Galactic Plane, will eventually lead to the discovery of ⊠150 new dormant BH transients i.e. a ten-fold increase over the known population. That will allow constraining the number density, orbital period distribution, kinematics and, ultimately, the BH mass spectrum. It will also uncover and characterize large numbers of other Hα emitting objects in the Galaxy to unprecedented depths, such as hundreds of cataclysmic variables (mostly eclipsing) and countless numbers of Be stars, Symbiotics, T Tauri, planetary nebulae etc. Furtthermore, because of its observing layout, mini-HAWKs will furnish ⊠14h light curves of every object which will be instrumental to identify variable objects and measure periods from, for example, pulsating stars, eclipsing binaries and ellipsoidal modulations. Mini-HAWKs has been selected as one of the 4 Legacy Surveys of the JAST80 telescope at the Observatorio de Javalambre in Teruel and has been granted with 400 h of observing time. The survey started in Dec 2024 and will be deployed over the next 2-3 years.

Contribution

Oral talk

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