A Search for Intermediate-Mass Black Holes at the Centers of Nearby Dwarf Galaxies using SALT

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The correlation between black hole (BH) mass and the bulge velocity dispersion is well established for early-type galaxies having a supermassive BH ($10^7 - 10^{10}$M$_\odot$) in their centers. The extrapolation of this relation to the lower BH-mass regime is strongly dependent on the existence of BHs in the mass range of $10^3 - 10^6$M$_\odot$ – called the "intermediate-mass" black hole (IMBH). The BH mass versus velocity dispersion relation infers the existence of IMBHs in dense stellar environments having dispersion in the range of 20–100km/s. Dwarf galaxies are well known to have central velocity dispersions in this range making them ideal candidates for hosting an IMBH. I will present an ambitious project for the search of IMBHs using the Southern African Large Telescope (SALT). In particular, the results of a pilot study in the search of these objects at the center of nearby dwarf galaxies using the SALT spectrograph will be shown. Even though the presence of an IMBH in the galaxy center remains inconclusive with the current data, these results do however give a great deal of insight into the capabilities and limitations of SALT in our search for the elusive IMBH.