Seminarium Astrofizyczne

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Supermassive black holes in quasars for the Hubble tension

One supermassive black hole (SMBH) has been found in the center of Milky Way, which was awarded the Nobel Physics Prize in 2020. Quasars as monsters in the Universe are known to contain accreting SMBHs from their surroundings in galactic nuclei. Optical and ultraviolet spectra of quasars are characterized by broad emission lines with full-width-half-maximum of a few 1000km/s, which is called as broad-line region (BLR). Thanks are given to GRAVITY/VLTI for its powerful spatial resolution of the BLR of the first quasar 3C 273, and its angular size was measured, recently. In the meanwhile, reverberation mapping (RM) campaign is able to accurately measure the linear size of the broad-line region. Joint analysis of GRAVITY and RM data allows to have both the distances and SMBH mass simultaneously, providing a geometric measurement of cosmic distances. This accurate measurement is totally different the classical tools, such as Cepheid stars, type I supernovae and baryon acoustic oscillation. This will greatly help solve the Hubble tension.

Serdecznie zapraszam,
Agnieszka Majczyna