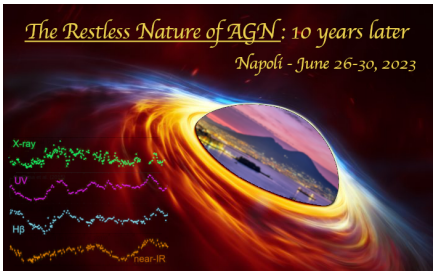

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Resolving the BLR with VLTI/GRAVITY

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With VLTI/GRAVITY and near-infrared (NIR) interferometry, we can directly spatially resolve the broad-line region (BLR) to probe its physics and derive supermassive black hole (SMBH) masses via dynamical modelling. This method provides an independent test of the assumptions of reverberation mapping (RM), which has been the main method used so far to study the small scales associated with the BLR. In this talk, I will present our study of 7 type 1 AGNs observed with VLTI/GRAVITY. All of our studied BLRs can be well described by a thick, rotating disk of clouds. For each individual AGN, though, we can trace substructure and non-circular motions. For Mrk 509 and PDS 456 in particular, we find evidence for significant outflows. Interestingly, we find significant spatial offsets between average photocenters of the hot dust continuum and the BLR (ranging from $\sim$17μas to 140μas), which seem to follow a tight relationship with the AGN luminosity. I will discuss our interpretation of this relation, together with the implications of our results with RM, the physics of the BLR, and scaling relations such as the radius-luminosity (R-L) and black hole mass – stellar velocity dispersion ($M_{\rm BH}$ - σ_*) relations.

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