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**Gamma-ray Loud AGN in the Era of ASTRO-H**

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The phenomenon of Active Galactic Nuclei (AGN) is related to accreting supermassive black holes hosted by massive galaxies. The integrated radiative output of the accreting matter in AGN dominates the extragalactic background light in the X-ray band, while the non-thermal emission of the plasma outflowing from AGN in the form of relativistic jets is widely believed to provide the bulk, or at least a substantial fraction of the extragalactic background photons at  $\gamma$ -ray energies. A multiwavelength approach is required for a proper understanding of AGN physics, with the X-ray and  $\gamma$ -ray bands being particularly important yet in several aspects the least explored regimes. Here we discuss how in a near future the ASTRO-H satellite will open a new chapter in the studies of high-energy radiation of  $\gamma$ -ray loud AGN, especially in the hardly explored regime from 10 keV up to several hundreds of keV photon energies. This includes in particular monitoring of highly variable synchrotron emission of the highest-energy electrons in blazars, and in general probing with unprecedented accuracy the accretion process onto supermassive black holes. The operation of ASTRO-H will proceed in parallel with the operation of *Fermi*-LAT as well as modern and next-generation Cherenkov Telescopes such as MAGIC, H.E.S.S. II, or later CTA. We emphasize the synergy between the  $\gamma$ -ray and the X-ray observations in understanding particle acceleration and accretion processes in AGN.