

# Role of active galactic nuclei and flow of relativistic jets

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**Abstract.** The astrophysics of Active Galactic Nuclei (AGN) is one of the long outstanding issues in searches among the scientific communities raised with diverse perspectives like nebula, quasars, etc some decades ago. Currently, this exotic system is at least understood as the center of an active galaxy. Thus, the consensus of this recent theory has opened up a number of research issues for the progress of astrophysical science including how the hosting galaxy evolves with the AGN, how matter and energy flow towards and outwards, etc. Moreover, most of the AGNs possess Supermassive Black Holes (SMBHs) and accrete matter at a very high rate as current observations report. Consequently, both observations of electromagnetic (EM) spectrum and Gravity Waves (GWs) will be considered to provide complementary information about the AGNs and the roles in their environments including black holes in their centers, outflow and inflow of matter-energy. Interested with this background rationale, we study the mechanisms of AGN interaction with its environment and flow of relativistic jets where General Relativistic (GR) Magneto-Hydrodynamic (MHD) equations are being considered. The solutions of the field equations are treated with a metric that involves charged systems for the possible relativistic jets including accretions. Then, numerical data is being generated using the latest version Mathematic software. Finally, the theoretical data is being compared with that of observation for validation of the model.

**Keywords.** galaxies: active, galaxies: properties

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