

Progress Report

**DENSITY WAVES OF IONIZED GAS IN BROAD-LINE REGIONS
OF ACTIVE GALACTIC NUCLEI**

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There are growing evidence that the broad-line regions (BLRs) in AGNs have substructures or inhomogeneity, e.g., the sub-features of the velocity-delay maps in reverberation mapping. These substructures in BLRs may originate from or be connected with the instabilities in the self-gravitating regions of accretion disks. We will present our recent work about the loosely wound spiral arms excited by gravitational instabilities in disk-like BLRs and their observational characteristics. It is found that the spiral arms can explain some phenomena in observations.