## XIII SERBIAN CONFERENCE ON SPECTRAL LINE SHAPES IN ASTROPHYSICS August 23-27, 2021, Belgrade, Serbia Book of Abstracts, Eds. A. Kovačević, L. Č. Popović and S. Simić Astronomical Observatory Belgrade, 2021

Progress Report

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

## Pu Du and Jian-Min Wang

Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China E-mail: dupu@ihep.ac.cn

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.