



Contribution ID: 30

Type: Talk

## VLBI study of the jets in radio-loud narrow-line Seyfert 1 galaxies

*Wednesday, 11 April 2018 15:50 (20 minutes)*

Narrow-line Seyfert 1 galaxies have relatively small black hole masses, and high accretion rates, thus are thought to be young AGNs. Radio-loud narrow line Seyfert 1 galaxies (RLNLS1s) are very special, because some of them show blazar-like characteristics, while others resemble compact steep-spectrum sources. Relativistic jets were shown to exist in a few RLNLS1s based on VLBI observations and confirmed by the gamma-ray flaring of some of them. These properties are unexpected, in light of the low black hole masses, high accretion rates, and possible spiral hosts of these RLNLS1s. With their remarkable multi-wavelength properties and extreme location in AGN parameter space, RLNLS1s allow us to re-address some of the key questions regarding the physics of jet formation, for example, the physical conditions under which a jet can be launched. In this talk, we will present our series of work on the compact radio structure of radio-loud narrow line Seyfert 1 galaxies based on VLBA observations, including the sample study for a sample of 33 RLNLS1s, the multi-band VLBA studies on two gamma-ray sources (J1443+4725 and J2118-0732), and multi-epoch variability and kinematic study on several sources. The implications on the jet formation are discussed based on the pc-scale jet properties.

### Motivation

### Grant

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