

# On the evolution of the radio luminosity functions in radio-loud AGNs with steep-spectrum

Friday, 22 April 2011 14:50 (5 minutes)

## Summary

We concentrate our efforts on the study of the correlation between radio galaxies/QSOs and their cores via radio luminosity functions. Using a large combined sample of 1100 radio-loud AGNs selected at low radio frequency, we investigate the radio luminosity function (RLF) at 408 MHz band. We also estimate the core RLF at 5 GHz band based on the 3CRR sample and the combined sample. Main results are follow as:

- (1). In agreement with previous results, we note a strong correlation between core and total radio power for RGs and QSOs, but the correlations has large dispersion, especially for QSOs. We find that the total power of RGs more strongly depend on core radio power compared to QSOs.
- (2). Looking at the possible existence of a redshift cut-off', the steep-spectrum RLFs we obtained do not show an obvious density decline for powerful radio sources beyond  $z \sim 2.5$  over the whole luminosity range, while the density does dramatically decline at the faint end. We argue that the evolution of radio AGNs is luminosity-dependent and the so-called redshift cut-off' may also exist in steep-spectrum population, probably at higher redshift.
- (3). The core RLFs we obtained show that the comoving number density of radio cores has a persistent decline with redshift, implying a negative density evolution. We believe that the radio core emission could be gradually powered by central engines, or their radio-loudness be epoch dependent.
- (4). It is noticed that the core RLF is obviously different from the total RLF at 408 MHz band which is mainly contributed by extended lobes, implying that the core and extended lobes could not be co-evolving at radio emission.

**Primary author:** Mr 袁, 尊理 (YNAO)

**Co-author:** Prof. 王, 建成 (YNAO)

**Presenter:** Mr 袁, 尊理 (YNAO)

**Track Classification:** 2, 星系活动与超大质量黑洞的形成和演化