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A study of different orientation of jet axes in DDRGs

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Double-double Radio Galaxies (DDRGs) consist of a pair of double radio sources with a common central AGN. They are unique observational evidence of recurrent jet activity in AGN. In most cases, the diffuse outer double lobes appear reasonably well aligned with the inner ones and they maintain long-term steadiness in bipolar relativistic jet outflows. There are a few examples of “misaligned DDRGs” which undergo different axis orientation for two epochs. The reorientation of the jet axis in these misaligned DDRGs may be caused by an axis precession of the AGN. Influence of a nearby galaxy or the coalescence of massive black holes may trigger a new jet with sufficient axis rotation. In order to understand the possible mechanisms of axis reorientation and the timescales of their duty cycle, we performed multi-frequency radio observations of a few misaligned DDRGs. Study of their optical host galaxies also suggests that they are often associated with past or ongoing galaxy interactions. Here we present the main results from our radio and optical observations and discuss on the possible scenarios responsible for the intermittent jet activity with axis rotation in the case of misaligned DDRGs.

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