OJ287: Deciphering the "Rosetta stone of blazars"

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OJ287 is the best candidate Active Galactic Nucleus (AGN) for hosting a supermassive binary black hole (SMBBH) at very close separation. We present a re-analysis of 120 Very Long Baseline Array (VLBA) observations (at 15 GHz, MOJAVE survey) covering the time between Apr. 1995 and Apr. 2017. We find that the OJ287 radio jet is precessing on a timescale of ˜ 22 yr. In addition, our data are consistent with a jet-axis rotation on a yearly timescale. We model the precession (24±2 yr) and combined motion of jet precession and jet-axis rotation. The jet dynamics and flux-density light curves can be understood in terms of geometrical effects. Disturbances of an accretion disk caused by a plunging black hole do not seem necessary to explain the observed variability. Although the SMBBH model does not seem necessary to explain the observed variability, a SMBBH or Lense-Thirring precession (disk around single black hole) seem to be required to explain the timescale of the precessing motion.