2. Motivation —— EAVN’s Uniqueness

- EAVN observations were performed near-in-time with EHT
- Field of View comparison (EAVN & EHT)

3.1 Spectral Index Property

We adopted the self-referring method (Cao+2009) to calculated the core shift between K and Q band. The actual offset is around 20 ~60 μas which is also consistent with phase-referring method (Wajima+2017).

We can calculate the expected integrated flux density around BH:
\[ S_{\text{int}, 230\text{GHz}} = S_{\text{core, 230GHz}} \times \frac{\nu_{\text{EHT}}}{\nu_{\text{VLBA}}} = 47 \text{mJy} @ \text{EHT} \]

3.2 Jet Direction

The radio galaxy M87 offers a privileged opportunity to probe the jet launching and formation scales thanks to the proximity and large mass of the central black hole. This makes M87 a prime target for EHT along with SgrA*. In April 2017, M87 was for the first time observed by EHT+ALMA. This may allow the first imaging of the black hole shadow and jet-launching regions at scales of a few Schwarzschild radii. However, due to the sparse uv-coverage of the EHT, a proper interpretation of the EHT image may require contemporaneous complementary observations at the lower frequencies that provide the higher fidelity jet images.

3.3 Velocity Profile

High cadence: the time interval between nearby epochs is 4 ~ 8 days. It may provide a chance to detect very high proper motion. We started with simply visual check of super-resolved images. The knots may have over 3.5 c velocity.

4. Future Work

Our work is still in progress, in addition to make a more accurate summary of current preliminary results, we will investigate more aspects of EAVN 2017 campaign data:

- Possible cause of mm- and MMT position angle changing;
- Try traditional and new method to detect high proper motion;
- Comparison of the measured jet collimation and acceleration with theoretical model
- Investigations of other sources: we also observed other sources in our observation, like 3C273.

5. Reference

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- Croke & Gabuzda, 2008, MNras, 386, 619
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- Wajima et al. 2016, ASPC, 502, 81