S08a Cen A core-jet structure from EHT2017 data reanalysis

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In EHT data, the ultrashort baselines are indeed important, and faint structures can be detected by them (Miyoshi, Kato, Makino, & Tsuboi, ApJL, 963, L18, 2024). Focusing on this effect, we discuss the results of our reanalysis of the EHT data of Cen A (NGC 5128). Cen A is a cosmic jet object at the nearest neighbor distance ~ 3.4 Mpc and is thought to have a SMBH with mass $(5.5 \pm 3.3) \times 10^7 \mathrm{M}_\odot$ in its central core. However, the location $\delta \sim -43^\circ$ makes it difficult to observe from northern VLBIs, and the only high spatial resolution observations are done from the TANAMI and Space VLBIs. The EHT is suitable for southern sky observations, because it includes the Antarctic SPT, and Cen A was observed at 228 GHz in 2017. The EHTC analysis (Michael et al., Nature Astronomy, 5, 1017-1028, 2021) reported no its famous long jet, but rather an asymmetric 300 μas jet with both- edge brightened and counter-jets. We found the structure is similar to the PSF (point spread function; dirty beam in radio interferometric terminology) structure for Cen A of the EHT array (as in the cases of the ring images of M 87 and Sgr A* in the EHTC reports), suggesting that it is possible that the image is due to inadequate deconvolution of PSF. Also, the residuals in amplitudes and closures are quite large, so the confidence level of the image is not very high. Our independent analysis found jet components from the center out to about 2 mas, as well as a structure in the core almost perpendicular to the jet. This is brighter than the jet. It may be an accretion disk or an unknown type of outflow.