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Painting by Numbers with Picasso: validating a new polarized GRRT code using RAPTOR and IPOLE

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General relativistic ray-tracing (GRRT) codes are used to track accretion disk photons back to the observer in order to create a simulated image. For polarized observations, such as those of M87*, the GRRT must also track the evolution of the full Stokes parameters. We have developed a new polarized GRRT code, Picasso, building on the previous unpolarized version. To validate the use of this code, we compare it to the other GRRT codes RAPTOR and IPOLE. Using pre-existing snapshots from ten general relativistic magnetohydrodynamics simulations, we have also created a library of images for M87* and derived the resulting image statistics. These include the total flux density, linear polarization fraction, average polarization, and the electric vector position angle. Here, we present the results of this validation, as well as discuss the advantages of this new framework as a tool for fitting and recreating EHT data and observations.

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