Geometric modeling for the Event Horizon Telescope: Investigating the width of the ring feature in M87* WILL LOCKHART, SAM GRALLA, University of Arizona — The 2017 Event Horizon Telescope (EHT) observations of the core of the galaxy M87 are the first electromagnetic observations probing event horizon scales of a black hole. The data strongly favor an observational appearance dominated by a ring of approximately 40 micro-arcseconds in diameter. However, many interesting questions remain about the appearance of the source. In particular, the thickness of the ring is much less certain. I will argue that some of the geometric modeling results are in tension with theoretical expectations - the observed ring is too narrow - and explore whether this tension can be resolved by alternative data analysis methods. First, I will report on our independent verification of a subset of the EHT collaborations geometric modeling results, using a new code built from scratch. Second, I will discuss some subtleties in the choice of likelihood function used in model-fitting, and test the sensitivity of the results on the choice of method. We find that the choice of likelihood function does in fact bias the results for ring width, however, which likelihood approximation is the best choice for this dataset remains uncertain.

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