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Lining Up Your Shots: Capturing the Interesting Part of Highly Eccentric EMRI Gravitational Wave Snapshots AARON JOHNSON, DANIEL OLIVER, DANIEL KENNEFICK, Univ of Arkansas-Fayetteville — Extreme mass ratio inspirals (EMRIs) with highly eccentric orbits, while not individually resolvable, collectively will constitute a noise source for LISA, the proposed space-based gravitational wave detector. Previous characterizations of the noise source have used a Newtonian order approximation. We seek to improve this estimate by using a frequency domain, Teukolsky based approach or semi-relativistic approximation. At high eccentricities, the largest mode may reside at the 10,000th or even the 100,000th radial harmonic mode for eccentricities of 0.999 and 0.9999 respectively, but fortunately the lower modes are mostly negligible compared to the peak modes. Here we present a method to predict where the peak mode is going to be so that the negligible modes can be skipped and discuss the methods currently implemented in our Teukolsky based code.

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