Black hole quasi-normal mode spectroscopy with LISA[1] MANISH
M. JADHAV, LIOR M. BURKO, University of Alabama in Huntsville — We present
an improved estimate of the signal-to-noise ratio (SNR) for the gravitational waves
from the ring-down phase of coalescing black hole binaries for the NASA/ESA space-
borne mission LISA. The usual all-sky average assumption is relaxed. We replace the
usual averages of the spin-weighted spheroidal harmonics and physical and geomet-
rical variables by Monte Carlo values, that are computed randomly for detector—
source directions, black hole orientations, polarization state, phases, etc. E.g., for
a given "radiation efficiency" $\epsilon_{\rm rd}$ we use a randomly generated "radiation efficiency
per polarization state" $\epsilon^{+,\times}$, that reflects our ignorance of the polarization state of
a typical source. We then estimate the non–angle–averaged, polarization and phase
dependent SNR for both Schwarzschild and Kerr black holes, and determine by how
much they differ from their all–sky averages as a function of the population sizes.

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Date submitted: 11 Jan 2008   Electronic form version 1.4