

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Visualizing the gravitational lensing and vortex and tendex lines of colliding black holes HAROON KHAN, GEOFFERY LOVELACE, Cal State Univ- Fullerton, SXS COLLABORATION — Gravitational waves (GW's) are ripples of space and time that are created when the universe unleashes its violent nature in the presence of strong gravity. Merging black holes (BH) are one of the most promising sources of GW's. In order to detect and physically study the GW's emitted by merging BH with ground based detectors such as Advanced LIGO, we must accurately predict how the waveforms look and behave. This can only be done by numerically simulating BH mergers on supercomputers, because all analytical approximations fail near the time of merger. This poster focuses on using these simulations to answer the question of “What do merging BH look like”? I will present visualizations made using the Spectral Einstein Code (SpEC) and in particular a raytracing lensing code, developed by the SXS Lensing team, that shows how merging BH bend the light around them. I will also present visualizations of the vortex and tendex lines for a binary BH system, using SpEC. Vortex lines describe how an observer will be twisted by the BH and the tendex lines describe how much an observer would be stretched and squeezed. I am exploring how these lines change with time.

Haroon Khan
Cal State Univ- Fullerton

Date submitted: 07 Jan 2016

Electronic form version 1.4