

**Formation and Ejection of Double-Helix Plasma Structures
from Gravitational Wave Emitters***

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Double-helix plasma structures have been identified and shown to form in and propagate away from the time dependent plasma configurations in which Black Hole binaries can be imbedded [1]. These structures are envisioned to extend up to plasma regions where they can be disrupted. By now experimental observations on the termination of jets have found that they can involve double-helix magnetic topologies [2]. Theoretically, these structures are found to emerge as non-linearly coupled torsional ion sound waves which, in the presence of a background magnetic field, in both the formation and terminal plasmas generate helical magnetic field configurations while remaining nearly "electrostatic" [1] in regions where no significant background magnetic field is present. These (double-helix) structures corotate with the binary and can propagate independently in either of the two vertical directions. The coupling involves Intrinsic Gravitational Modes [3] originating in the circumbinary disk and Inner Gravitational Fluctuations emerging from the Swept (Toroidal) Regions [1] traced by one or both Black Holes. *Sponsored in part by CNR and the Kavli Foundation.

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