

Abstract Submitted  
for the DPP19 Meeting of  
The American Physical Society

**Novel Processes to Produce High Energy Particles in Plasma Surrounding Compact Binaries**<sup>1</sup> BRUNO COPPI, MIT — The existence of plasmas around black holes was proposed as early as 1968 and in fact the first identification of galactic black holes was through the radiation mission of the plasmas associated with them. When a binary of two neutron stars or two black holes is relatively close to collapse, magneto gravitational modes [1] can be sustained by the oscillations of the surrounding plasma density having frequencies related to the orbiting frequency of the binary components. The plasma modes introduced for this are of the ballooning type (in the vertical direction) and have the frequencies of corresponding compressional Alfvén waves. A new form of “damping” associated with the relevant mode particle resonances is identified [1].

[1] B. Coppi, Plasma Physics Reports, 45, 5, (2019).

<sup>1</sup>Sponsored in part by the U.S. Department of Energy and by C.N.R. of Italy.

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Date submitted: 09 Aug 2019

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