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White Light Signal Enhancement

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White light signal enhancement using an optomechanical negative dispersion systems show promise to dramatically increase the sensitivity bandwidth of gravitational wave detectors. At the University of Western Australia three promising mechanical resonators are being designed and investigated. Demonstrated properties of a phononic metamaterial device have been shown in simulation to increase detector bandwidth by a factor of ~ 10 . Applied to 4km detector such a technology would allow sensitivity at the frequencies where binary neutron star signals will reveal the nature of dense nuclear matter right before it collapses into a black hole. This presentation is a summary of work at UWA to develop the white light signal enhancement technology.

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