Abstract Submitted
for the APR20 Meeting of
The American Physical Society

LIGO Voyager: A Cryogenic Silicon Interferometer for Gravitational-wave Detection RAYMOND ROBIE, AIDAN BROOKS, CHRISTOPHER WIPF, KOJI ARAI, RANA ADHIKARI, LIGO Laboratory, Caltech, LIGO COLLABORATION — The detection of gravitational waves from compact binary mergers by LIGO has opened the era of gravitational wave astronomy, revealing a previously hidden side of the cosmos. To maximize the reach of the existing LIGO observatory facilities, we have designed a new instrument that will have 5 times the range of Advanced LIGO, or greater than 100 times the event rate. Observations with this new instrument will make possible dramatic steps toward understanding the physics of the nearby universe, as well as observing the universe out to cosmological distances by the detection of binary black hole coalescences. Implementation of this new instrument utilizes much of the current LIGO infrastructure, and there are no fundamental noise obstacles or unrealistic engineering requirements for its implementation. Thus, its commissioning and operation are feasible on a realistic timescale and budget. This presentation will highlight the design concept for this next generation ground based gravitational wave detector, focusing on the instrument hardware upgrades and a quantitative analysis of the anticipated noise floor.

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Date submitted: 10 Jan 2020 Electronic form version 1.4