Analog Black Hole Experiment *Via* Laser (AnaBHEL): A Confluence of High-Power Laser Physics and Cosmology

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As an intense laser pulse traverses through underdense plasma, it initiates the formation of a relativistic electron shell trailing the main laser. If the electron shell is dense enough, it can behave as a relativistic plasma mirror. This phenomenon has parallels with the accelerating relativistic flying mirror model in cosmology, which has been associated with black hole Hawking radiation. In a pioneering effort in 2017, Chen and Mourou bridged these two concepts, laying the groundwork for the international AnaBHEL (Analog Black Hole Experiment via Laser) collaboration. The objective of this project is to investigate the analog Hawking radiation and to shed light on the information loss paradox. My talk will provide an overview of the AnaBHEL project, report on its research and development progress, and share our future plans. We wish to bridge the exciting interface between high-power laser physics and cosmology.