

Gravitationally Sensitive Structured X-Ray Optics Using Nuclear Resonances

S Y LEE¹, S AHRENS², AND W T LIAO¹

¹*Physics, National Central University, Taoyuan, Taiwan*

²*Department of Physics, Shanghai Normal University, Shanghai, China*

Contact Email: wente.liao@g.ncu.edu.tw

Einstein's general theory of relativity not only revolutionized our understanding of the universe but also led to numerous gravitational applications on a large scale, such as gravitational-wave astronomy. However, it is still a challenge to find a gravitational application at small spatial extensions on Earth. In this study, we investigate a structured waveguide system that enables the control of an X-ray profile at altitude separations of millimeters or even shorter, utilizing the nuclear resonant scattering of X-rays. Our current findings suggest a potential compact solution for using Earth's gravity as a practical application of X-ray optics [1].

References

- [1] S-Y Lee, S Ahrens and W.-T. Liao, arXiv:2305.00613 (2023)