Contribution ID: **3** Type: **not specified**

Displacement memory for flyby

Wednesday, January 22, 2025 9:40 AM (25 minutes)

Zel'dovich and Polnarev suggested that particles hit by a burst of gravitational waves generated by a flyby would merely be displaced. Their prediction is confirmed by fine-tuning the derivative-of-a-Gaussian wave profile proposed by Gibbons and Hawking, or analytically by its approximation by a P¨oschl-Teller potential. The study is extended to higher-order derivative profiles as proposed for gravitational collapse.

Based on:
P. M. Zhang and P. A. Horvathy, "Displacement within velocity effect in gravitational wave memory,"Annals Phys. 470 (2024), 169784 [arXiv:2405.12928 [gr-qc]].

P. M. Zhang, Q. L. Zhao, J. Balog, P. A. Horvathy, "Displacement memory for flyby,"Annals Phys. 473 (2025), 169890 [arXiv:2407.10787 [gr-qc]].

P. M. Zhang, Q. L. Zhao, M. Elbistan P. A. Horvathy, "Gravitational wave memory: further examples,"[arXiv:2412.02705 [gr-qc]]

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