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Ab initio Calculation of the Anomalous Acceleration of Pioneer 10 RUSSELL ANANIA, MICHAEL MAKOID, Creighton University — The anomalous accelerations of Pioneers 10 and 11, while opposite, are both directed towards the Sun. Using that both light and gravity are equally bent by gravity itself, and independently of energy, then gravity from behind the Sun may be focused onto a test mass, such as Pioneer 10, and increase its deceleration towards the Sun. The bending of gravitational forces of objects behind the Sun is delineated in an optical model to calculate additional forces on Pioneer 10. The optical model contains no free parameters, and its predictions differ from the anomalous constant acceleration by less than 0.2%. Further observational implications are discussed. The need for dark matter in the Solar System is now obviated.

Michael Makoid
Creighton University

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