

Abstract Submitted  
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**Ion Acceleration in a Solitary Wave by Laser Pulse with Ramping-up Amplitude** MIN-QING HE, University of Maryland, College Park, Maryland 20742, USA, VIPIN TRIPATHI, Indian Institute of Technology, New Delhi 110016, India, CHUAN-SHENG LIU, XI SHAO, TUNG-CHANG LIU, JAO-JANG SU, University of Maryland, College Park, Maryland 20742, USA, ZHENG-MING SHENG, Shanghai Jiao Tong University, Shanghai, 200240, PRC — Recent work by Jung *et al.* demonstrated experimentally the acceleration of mono-energetic ion beam by solitary waves generated and maintained by laser light with ramping-up amplitude.<sup>1</sup> Theoretical model is developed in this work to study the formation of the solitary wave and effects of the radiation pressure force on a soliton in the accelerating plasma. 2D Particle-In-Cell (PIC) simulations are performed to compare and validate the theory. Differences in generating and maintaining solitary wave for laser with and without ramping-up amplitude are also investigated. We will also investigate effects of radiation pressure acceleration of plasma with near critical density.

<sup>1</sup>D. Jung, L. Yin, B.J. Albright, D.C. Gautier, R. Hörlein, D. Kiefer, A. Henig, R. Johnson, S. Letzring, S. Palaniyappan, R. Shah, T. Shimada, X.Q. Yan, K.J. Bowers, T. Tajima, J.C. Fernández, D. Habs, and B.M. Hegelich, Phys. Rev. Lett. 107,115002(2011).

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