



Contribution ID: 15

Type: **not specified**

Proton acceleration with light pressure and wakefield

Tuesday 29 November 2016 13:55 (25 minutes)

We discuss proton acceleration with 10PW lasers. In 2001, we proposed proton acceleration with light pressure for the first time [1]. Then in 2007, we explained that light pressure acceleration is actually multistaged acceleration of collisionless electrostatic shock driven by the laser pressure [2, 3]. However, the method of light pressure is hard to support proton acceleration of energy larger than 10 GeV. Therefore, we proposed to acceleration proton with laser driven wakefield [4]. The main problem for proton acceleration with wakefield is the transverse defocusing force preventing persistent acceleration. To solve this problem we proposed to use vortex to drive a wakefield of an electron cylinder in the middle [5]. Recent experiment with clusters is also discussed.

- [1] Baifei Shen et al., PHYSICAL REVIEW E 64 056406
- [2] Xiaomei Zhang, Baifei Shen et al., Phys. Plasmas 14, 073101 (2007)
- [3] Xiaomei Zhang, Baifei Shen et al., Phys. Plasmas 14, 123108 (2007)
- [4] Baifei Shen, Xiaomei Zhang et al., Phys. Rev. E, 055402 (2007)
- [5] Xiaomei Zhang, Baifei Shen et al. New J. Phys. 16, 123051(2014)

Authors: Prof. SHEN, Baifei (State Key Laboratory of High Field Laser Physics, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences); Dr ZHANG, xiaomei (State Key Laboratory of High Field Laser Physics, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences)

Presenter: Prof. SHEN, Baifei (State Key Laboratory of High Field Laser Physics, Shanghai Institute of Optics and Fine Mechanics, Chinese Academy of Sciences)

Session Classification: Extreme Light and Applications

Track Classification: Extreme Light and Applications