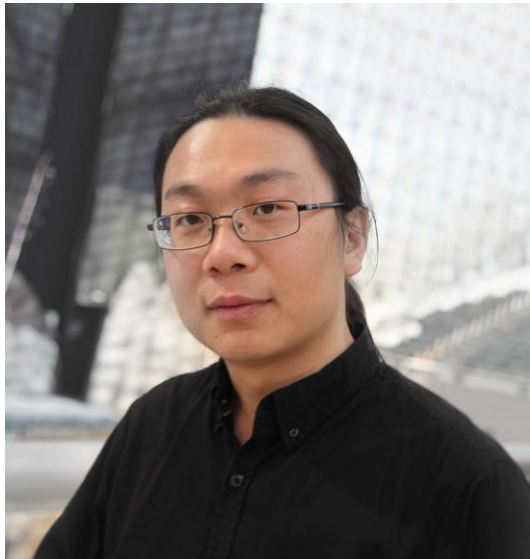


## Towards Future Light Sources and Colliders: the promises and challenges for the plasma based accelerator



Wei Lu

Department of Engineering Physics, Tsinghua University of Beijing, China

Dr. Wei Lu has been a full professor of Tsinghua University since 2011, and currently he is leading a research team with a focus on high quality plasma based accelerator and light source. In 1998 and 2001, Dr. Lu obtained his B.S. and M.S. degrees in Tsinghua University. In 2006, he obtained his Ph.D degree on plasma physics at UCLA. Dr. Lu has received worldwide recognition for his contribution on plasma based accelerator research. He won several international awards, including the first edition of John Dawson prize of plasma accelerator community (2007), the IUPAP Young Scientist Prize on plasma physics (2014, as the first winner on laser plasma and high energy density physics), the first edition of Young Researcher Award of AAPPS on plasma physics (2016). Dr. Lu has coauthored more than 100 papers in journals and conference proceedings, including 3 Nature (1 cover), 1 Nature Photonics (cover), 1 Nature Physics, 3 Nat. Com. and 27 PRLs, with a total citation more than 4500 times. Since 2009, Dr. Lu has been on board of program or advisory committee for all the major conferences of plasma accelerators, including AAC, LPAW and EAAC.

Dr. Wei Lu has also been selected by several major national talent programs of

China, including thousands young talent program ( 2011), excellent young talents of NSFC, Leading young talents by MOST (2015), Ten thousands leading talents ( 2018).

Abstract:

In the 20th century, research tools based on accelerators has been growing in both sizes and their impact on science. This fact is evident in large scale colliders for particle physics and light sources for fundamental research in very broad fields. With the emerging and maturing of a new acceleration technology based on plasmas, the overall landscape could be changed, or could they? This new technology, named plasma based wakefield acceleration, can accelerate charged particles with more than 1000 times larger gradient with great beam quality, therefore it can shrink a kilometer scale monster onto a tabletop toy. In this talk, the basic concepts and recent progresses in this field will be reviewed, and a vision for building future light sources and colliders will be shared and discussed.