

Photonic Band Gap Accelerating Structures Progress Report

3Q FY18

In the third quarter of FY18 the wakefield experiments at Argonne Wakefield Accelerator (AWA) was resumed. The laser at AWA was repaired and functioned well. The beam transmission was improved. We conducted wakefield acceleration experiments with the multiple drive bunches to increase the accelerating gradient. We could pass as much as 40 nC of charge through the accelerating structure and observe significant change in energy of the witness bunch. The results are being analyzed in preparation for the Advanced Accelerator Concepts Workshop, 2018.

The work on high gradient testing at SLAC National Laboratory is also moving forward. The fabricated structure was inspected at SLAC and the actual dimensions of the structure were recorded. The structure with the actual dimensions was modelled with the CST Microwave Studio to ensure the compliance with the required fabrication tolerances. The structure is currently undergoing brazing at SLAC and the high gradient testing will follow.

The PI (Evgenya Simakov) and the postdoc (Janardan Upadhyay) attended the International Particle Accelerator Conference (IPAC2018) in Vancouver, Canada and presented the results of the project. Two papers were published in the conference proceedings.