Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Superconducting Proximity Effect in InSb Flake[1] JIE SHEN, HAO ZHANG, FOLKERT DE VRIES, NDER GL, MARTIJN SOL, Delft Univ of Tech, ROY OP HET VELD, STIJN BALK, SAA GAZIBEGOVI, ERIK BAKKERS, Eindhoven Univ of Tech, LEO KOUWENHOVEN, Delft Univ of Tech, QUTECH, DELFT UNIV OF TECH TEAM, DEPARTMENT OF APPLIED PHYSICS,EINDHOVEN UNIV OF TECH TEAM — InSb is an ideal platform to realize and braid Majorana zero modes(MZM) owing to its strong spin-orbit coupling, large Landé g-factor and high mobility. So far Majorana experiments in InSb have been limited to one-dimensional nanowire devices with Nb-based superconductors. However, braiding MZM in nanowire poses a great challenge due to the required complicated wire networks. To overcome this challenge, recent proposals have focused on the two-dimensional system, where the networks can be easily defined with a large degree of freedom using local gates. Among all proposed materials, 2D InSb flake system is one of the most promising candidates. Here, we study the superconducting proximity effect in 2D InSb flake. Our Josephson junctions based on InSb flakes contacted with NbTiN superconducting leads show a large switching current up to 500nA. Magnetic interference measurements reveal the standard Fraunhofer pattern, indicating there are no trivial edge states – states which complicate studies of topological superconductivity in other materials systems. Moreover, quantum Hall plateaus are observed, indicating the high quality of the flake system.

[1]FOM. Microsoft

Jie Shen
Delft Univ of Tech

Date submitted: 11 Nov 2016 Electronic form version 1.4