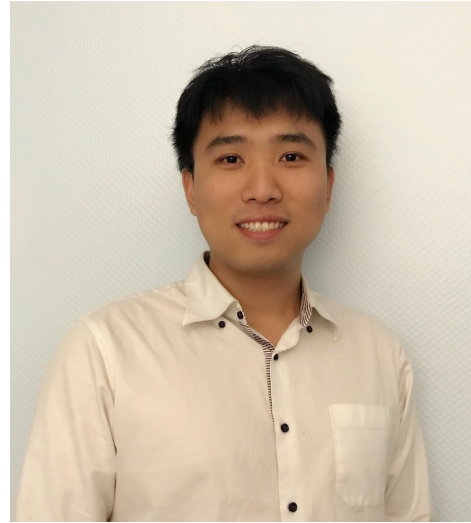


# Fall 2017 Joint Colloquium

## Materials Department & Materials Research Laboratory

**Dr. Hao Zhang**

QuTech (Research and Development in  
Quantum Technology)  
Delft University of Technology  
The Netherlands



Friday, December 1st, 2017  
11:00 am, ESB 1001

### **Quantized Majorana conductance**

Majorana zero modes hold great promise for topological quantum computing. A tunneling current from a metallic probe into a Majorana zero mode gives rise to a zero bias conductance peak. The Majorana peak height is predicted to be robust and quantized at the universal conductance value,  $2e^2/h$ . This quantized height is robust and topologically protected from disorder and the tunnel coupling change, which will resolve a quantized conductance plateau when sweeping the corresponding gate voltage. However, all previous reports of Majorana signatures show zero bias peaks with height either much less than, or close but not robust near this quantized value. Here we demonstrate zero bias conductance peaks in Majorana nanowires. The peak height reaches the quantized value  $2e^2/h$  for the first time. This peak height stays robust at the quantized value against the tunnel coupling change, giving rise to a quantized Majorana conductance plateau.

### **Bio**

Hao Zhang received his B.S. in Physics from Peking University in 2010. He obtained his PhD in Physics (Albert Chang group) from Duke University in 2014, working on electron correlation effect in quantum point contacts. He started working as a postdoc in Leo Kouwenhoven group at Delft University of Technology since 2014. His current research focuses on Majorana zero modes in hybrid superconductor-semiconductor nanowire systems.

<https://scholar.google.com/citations?user=dVVAzNoAAAAJ&hl=en>

Hosted by Chris Palmstrom.