

## ASC 2018 Special Session Announcement: “Superconductor Electronics Technology Roadmap for IRDS 2018”

July 30, 2018 (STH58/HP133). The 2018 Applied Superconductivity Conference will include a special session to present the International Roadmap for Devices and Systems (IRDS) and the 2018 technology roadmap for superconductor electronics.

ASC 2018 Oct 28 – Nov 2, Seattle, USA

Superconductor Electronics Technology Roadmap for IRDS 2018  
(5EO1A)

Friday, November 2, 8:00 a.m. – 10:00 a.m.

<http://ascinc.org/conference-program/special-sessions/>

A paper with the same title is in preparation. Others interested in contributing should contact Scott Holmes <[d.scott.holmes@ieee.org](mailto:d.scott.holmes@ieee.org)>.

## Superconductor Electronics Technology Roadmap for IRDS 2018

*D. Scott Holmes, Erik DeBenedictis, Robert L. Fagaly, Pascal Febvre, Deepnarayan Gupta,  
Anna Herr, Anna Leese de Escobar, Nancy Missert, Oleg Mukhanov, Satyavolu Papa Rao,  
Noboyuki Yoshikawa*

[d.scott.holmes@ieee.org](mailto:d.scott.holmes@ieee.org)

**Abstract** – The International Roadmap for Devices and Systems (IRDS) recently succeeded the International Technology Roadmap for Semiconductors (ITRS). The roadmap driver changed from scaling physical dimensions to application requirements and now includes a broader range of non-semiconductor technologies, such as superconductor electronics (SCE). In 2018 the IRDS published its 2017 roadmap reports and elevated Cryogenic Electronics and Quantum Information Processing (CE&QIP) to the status of an international focus team (IFT). Superconductor electronics is a key area, both on its own and within QIP. For the 2018 report, we consider initial application areas and market drivers for superconductor electronics using the IRDS framework. Applications such as computational accelerators will require significant improvements in circuit density, complexity, functional capability, memory capacity, and data rates in and out of the cryogenic environment. Models, metrics, and benchmarks predict device and system performance and guide technology roadmapping to meet application requirements. A process for developing an application-driven roadmap for superconductor electronics is described and a first roadmap is proposed.