Status of the C3 IARPA Program

June 25, 2014 (HE88). In 2013 the US IARPA (Intelligence Advanced Research Projects Activity) announced its intent to support the Cryogenic Computer Complexity (C3) program. The hopes for future R&D on superconducting flux quantum (SFQ) computing technology in the US hinge on the success of this program.

One of the initial steps leading to C3 was the "Proposers' Day" held on March 12, 2013. We reported on it in our HE74. The following steps were the Solicitation IARPA-BAA-13-05 (released on July 29, 2013), and the deadline for proposals set for September 13, 2013. There has been no further official announcements on this project. All the currently available information on C3, including a comprehensive program description, is posted at the IARPA C3 Program description site. In a nutshell, the intent of the C3 project is to demonstrate a small-scale computer based on superconducting logic and cryogenic memory that is energy-efficient, scalable, and able to solve interesting problems. The current BAA is for only phase 1 of the program, to develop the technologies required to demonstrate the value of superconducting computing. This phase is to be of three years duration. The program research consists of two technical thrusts:

- Cryogenic Memory (CM): Create new approaches to enable high performance computing systems with significantly improved memory capacity and energy efficiency compared to the state-of-the-art. Develop and demonstrate complete small-scale memories.
- Logic, Communications and Systems (LCS): Develop, fabricate, and test key superconducting logic circuits required to demonstrate the potential of superconducting logic for high performance computing. Develop a plan to integrate the components into a working computer.

Phase two, for the final two years, will integrate those new technologies into a small-scale working model of a superconducting computer.

We hear unofficially, that in the unspecified near future IARPA plans to make an announcement on the C3 program. Once that happens, we hope to able to report on it at some length.