

Since the 1950s, the IDA Center for Communications and Computing has performed fundamental research in support of the National Security Agency's mission in cryptology, which includes both foreign signals intelligence and protecting the communications of the U.S. Government. The Center is a nonprofit entity operating in the public interest, consisting of the Centers for Communications Research with offices in Princeton, New Jersey (CCR-P), and La Jolla, California (CCR-L), and the Center for Computing Sciences in Bowie, Maryland (CCS). All three have developed distinct areas of expertise. Nonetheless, they work closely with each other and share many overlapping research teams.



Our research focus

The research portfolio has evolved over the years as communications technologies have advanced. Today, areas of particular emphasis are the creation and analysis of sophisticated encryption methods, high-performance computing technologies, the development of advanced algorithms and their applications, algorithmic and mathematical foundations of cryptology, computer network technologies supporting communications security, information processing technologies supporting cyber security, and analytical applications for large data sets. This

list of problem areas gives no real hint as to the very wide diversity of mathematical approaches employed; virtually every branch of pure and applied mathematics has proved to be useful in these efforts.

Our success in providing cutting-edge research in mathematics and computer science to the National Security Agency (NSA) rests on four key pillars: exceptionally talented and versatile researchers, state-of-the-art computational capabilities, a close working relationship with NSA, and ongoing engagement with the broader research community so that the work can take advantage of advances in the academic and commercial worlds.

Collaborative, academic environment

We work in an exceptionally collaborative, academic-style environment that combines unique areas of expertise. It is critical that we recruit the very best new mathematical talent, and we therefore foster and maintain close ties with the academic mathematical world. We emphasize breadth and depth in our mathematics. Because of the flexibility of the environment, some researchers focus on coding, while others may do none.

Perhaps the most important collaboration occurs during the summer workshops, called SCAMPs, which draw academics and others to use a concerted "tiger team" approach to tackling several truly difficult problems each summer. The invitees to these workshops

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are diverse in many ways: they come from the academic community and other research organizations; there are many levels of experience among the attendees, who range from seasoned researchers and distinguished faculty to advanced graduate students and exceptional undergraduate students; and the disciplinary backgrounds include mathematics, computer science, statistics, physics, and electrical engineering. In a typical summer, the three centers host more than a hundred visitors, and the intense and collegial atmosphere is well known.

Center for Communications and Research, Princeton (CCR-P)

Dr. David Saltman, Director

The oldest of the three centers was founded in 1959 in Princeton, New Jersey, and was originally called the Communications Research Division. Our mission is to apply mathematical and computational research to cryptology and related disciplines. As the modes and means of modern communications have become more complex, we have expanded our research into other areas including speech, the processing of signals to remove noise and distortion, and network security. Mathematics remains the fundamental science used to create and analyze the sophisticated algorithms used to encipher vulnerable communications and cryptologic problems. For more information, contact hiring@idaccr.org.



Center for Computing Sciences (CCS)

Dr. Tad White, Director

CCS, founded in 1985, is located between Washington, DC, and Annapolis, Maryland. Initially focused on the development and use of high-performance computing, the CCS portfolio now includes cryptography, network security and related cyber issues, signal processing, advanced techniques for analyzing extremely complex data sets, and alternative computing paradigms. Most of the research staff are PhDs with backgrounds in computer science, mathematics, computer architecture, electrical engineering, information theory, and the natural sciences. For more information, contact hiring@super.org.



Center for Communications Research, La Jolla (CCR-L)

Dr. Ryan (Skip) Garibaldi, Director

CCR-L was founded in 1989 in La Jolla, California, a hilly, seaside town within the city of San Diego. We focus on mathematical research related to cryptology and signals intelligence, including machine learning. The typical CCR-L researcher has a PhD in mathematics, although CCR-L also hires researchers with backgrounds in computer science and engineering. For more information, contact hiring@ccrwest.org.



Work with us

You can discover what it's like to work at or with our centers without joining as a full-time employee by participating in the SCAMP Summer Program. For more information, contact the center of your choice.

U.S. citizenship is required for all applicants, and employment is contingent upon successful completion of a security background investigation and polygraph (which we sponsor).



Center for Communications and Computing
Princeton, NJ • Bowie, MD • La Jolla, CA