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ONR global-sponsored researcher wins Israel Prize

OFFICE OF NAVAL RESEARCH

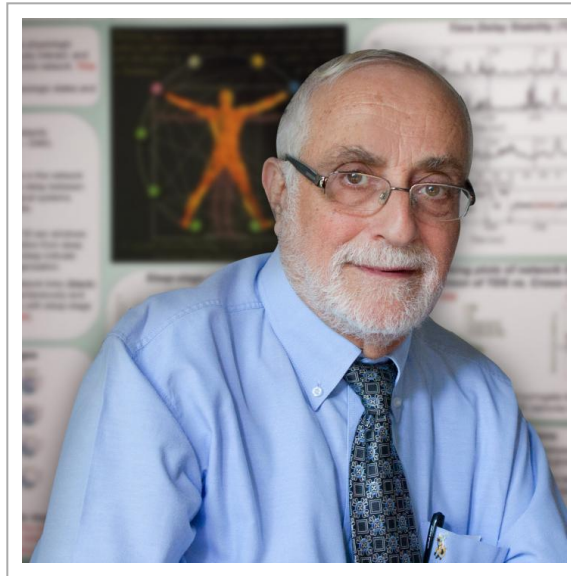


IMAGE: THIS IS DR. SHLOMO HAVLIN. [view more >](#)

CREDIT: DR. SHLOMO HAVLIN

ARLINGTON, Va.--On April 19, the state of Israel celebrated its 70th Independence Day. As part of the celebration, the country's highest cultural honor--the Israel Prize--was awarded to Dr. Shlomo Havlin, a physics professor at Bar-Ilan University in Ramat-Gan, Israel, for his Office of Naval Research (ONR) Global-sponsored work in physics.

According to the prize committee, Havlin was selected because he is "a pioneer of a number of fields in statistical physics...," which uses probability theory, statistics and math for dealing with large populations and approximations.

"The Israel Prize represents recognition by the Israeli government and scientific community that our novel theories and applications of statistical physics to real-world technological systems, such as critical infrastructure, have led to a better understanding of the resilience and functioning of these systems," said Havlin.

Throughout his nearly 50-year career, Havlin's physics work has produced several notable accomplishments, which have impacted fields of research ranging from social, technological and economic networks to physiological systems and DNA function.

Included in that body of work was the discovery of specific patterns in DNA sequences that led to a better understanding of "junk DNA," which was previously considered non-functional; the development of the first mathematical theory for evaluating the stability of complex networks (e.g., the internet); and the publishing of a theoretical framework for understanding and predicting the effects of interactions between networks.

Since 2014, much of Havlin's research into complex networks has been sponsored through two ONR Global basic research grants.

These grants serve as a mechanism to encourage international science and technology cooperation in areas of interest to the Naval Research Enterprise by providing seed funding to research teams of international scientists.

"I believe that the academic partnership with ONR Global is unique, particularly in terms of the relationship and interaction with ONR Global program officers," said Havlin. "In contrast to most funding agencies, we actually meet face-to-face with ONR Global program officers periodically and discuss possible projects with them in order to identify challenging research questions which are of interest to both sides."

Havlin's grants were co-sponsored by Dr. Bill Suski, ONR Global science director, and Dr. Mike Shlesinger, a program officer for ONR's Expeditionary Maneuver Warfare Department.

"I first met Dr. Havlin at a conference in 1982, and many times since at international conferences on the topic of fractals," said Shlesinger. "He has worked closely with U.S. scientists, including ONR-sponsored work at Boston University."

According to Shlesinger, the most recent work being done by Havlin optimizes computer network designs--or how computers, printers and other electronic devices are connected over a network--to counter different types of electronic attacks from random to focused disruptions.

And given that cyber-attacks are becoming more commonplace, and the damage they cause can be irreparable, the need for optimizing the security of networks against intentional attacks and viruses is vital not only for the Navy and Marine Corps, but other government agencies and indeed individual use.

Havlin has published 11 books, 800 scientific journal articles and been cited more than 73,000 times.

"Dr. Havlin's work has had global impact across a wide range of fields as evidenced by the number of times his work has been cited," said Suski. "The foundational nature of his work underscores not only the importance of funding basic research, but also the value of partnering with international scientists."

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