The Photon: Spotlight

On Alumnus Stephen Younger

Discussing the current threat

Threat Reduction Agency Head, Maryland Alum Visits Campus Community

December 6, 2001

by Sheldon Smith

Maryland President C. D. Mote (center) hosts Dr. Stephen Younger (center) and Air Force Lt. Col. John Parks to discuss the post-Sept. 11 global environment.

COLLEGE PARK, MD -- On Dec. 3, Dr. Stephen M. Younger, director of the Defense Threat Reduction Agency (DTRA) visited the Maryland Campus. He spent 45 minutes talking to students, faculty and staff about his career, DTRA and the post-Cold War and post-September 11 threats. He later talked with top university leadership on possible ways in which the University could assist a nation at war.

DTRA, located at Fort Belvoir, Va., is responsible for safeguarding America and its allies from weapons of mass destruction by reducing present threats and preparing for future threats. DTRA attempts to influence the international environment while preparing for an uncertain future shadowed by the threat of terrorist attack.

Younger earned a Ph.D. in theoretical physics from the University of Maryland in 1978. His advisor for his Ph.D. was Dr. M. L. Ginter, of Institute for Physical Science and Tecnology and the title of his work was: "Diagramatic Many-Body Pertubation Theory Applied to Highly Ionized Atoms of Copper Isoelectronic Sequence."

Since that time, Younger served at the National Bureau of Standards (NIST), the Livermore National Laboratory, and the Los Alamos National Laboratory, before being appointed to his current position.

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Physics Alumni | UM Physics Research

On Spintronics

A new class of device based on the quantum of electron spin, rather than on charge, may yield the next generation of microelectronics

by Dr. Sankar Das Sarma
Physics Professor

Dr. Sankar Das Sarma serves as one of the Maryland Physics Department's Distinguished University Professors

The last half of the 20th century, it has been argued with considerable justification, could be called the microelectronics era. During that 50-year period, the world witnessed a revolution based on a digital logic of electrons.

From the earliest transistor to the remarkably powerful microprocessor in your desktop computer, most electronic devices have employed circuits that express data as binary digits, or bits—ones and zeroes represented by the existence or absence of electric charge. Furthermore, the communication between microelectronic devices occurs by the binary flow of electric charges.

The technologies that emerged from this simple logic have created a multi-trillion dollar per year global industry whose products are ubiquitous. Indeed, the relentless growth of microelectronics is often popularly summarized in Moore's Law, which holds that microprocessors will double in power every 18 months as electronic devices shrink and more logic is packed into every chip.

Yet even Moore's Law will run out. Click here for full story in Adobe PDF

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For Younger, research continues to be a major interest -- particularly that which involves large-scale computer simulations. He presently maintains an active collaboration in the theoretical study of dense matter, and in the application of computational models to sociology.

Serving on a number of government committees, Dr. Younger takes a leading role in stimulating development of a new deterrence strategy that will address the constantly changing threats of a post-Cold War era.

"We're involved in monitoring the destruction of weapons of mass destruction. These often include nuclear, biological and chemical weapons," Younger said.

DTRA is responsible for numerous matters concerning technology security, and reports to the Under Secretary of Defense for Policy regarding these issues. The Advanced Systems Concept Office (ASCO), the Threat Reduction Advisory Committee and senior officials from the Departments of Entergy, State and the Federal Bureau of Investigation support Younger's efforts.

Dr. Stephen Younger discusses physics with Dr. Jordan Goodman, Dr. Patrick O'Shea and Dr. Stephen Halperin.

Following the interactive discussion, Younger was honored with a reception before being whisked away to a meeting in University of Maryland President C. D. Mote, Jr. The meeting also attended by William W. Destler, Senior Vice President for Academic Affairs and Provost; Chuan Sheng Lu, Vice President of Research and Graduate Studies; Stephen Halperin, Dean, College of Computer, Mathematical and Physical Sciences; Dr. Jordan A. Goodman, Chair, Physics Dept. Discussions centered around Maryland's ongoing efforts to strengthen alumni ties and willingness to dedicate resources to the War on Terrorism.

On Oct. 23, the Department of Defense issued a Broad Agency Announcement (BAA) specifically aimed at drumming up help for the War on Terrorism. In addition to the obvious task of combating terror, the announcement seeks assistance in defeating difficult targets, conducting protracted operations in remote areas, and developing countermeasures to weapons of mass destruction.

The objective of BAA is to find concepts that can be fielded within the next 12 to 18 months.

The University of Maryland is in an optimal position to answer the nation's call for help. Inside the beltway and only minutes from the Pentagon, Maryland has a broad range of programs that can be fitted into collaborative groups tailored to fit national needs.

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