OPN Talks with …

Joseph H. Eberly

Frederic Ives Medal/Jarus W. Quinn Endowment Recipient and FiO Speaker

Joseph Eberly of the University of Rochester has been a leader at the Optical Society for more than three decades. In light of his dedication to OSA and to optics and photonics, it is more than fitting that he receive the Society's highest recognition for his many important research contributions to quantum optics and optical physics; his leadership as a teacher and educator; and his tireless and visionary service to the optics community.

Eberly received his B.S. from Penn State and his Ph.D. in physics from Stanford, and he has been teaching graduate and undergraduate classes in the department of physics and astronomy at the University of Rochester since the 1970s. He is currently the Andrew Carnegie Professor of Physics and also a professor of optics. His long-time research interests in quantum optics and radiation physics have led to a number of discoveries, including the initial description of the spontaneous collapse and revival effect, the first observation of Bessel beams, predictions of the recently observed non-spreading localized states of electrons in atoms, and the sudden-death effect in quantum entanglement.

Eberly served as OSA's president during 2007, and he was the founding editor of *Optics Express*. He will be accepting the Frederic Ives Medal/ Jarus W. Quinn Endowment during the plenary session at this year's Frontiers in Optics (FiO) meeting held in Rochester, N.Y., U.S.A., from October 24-28.

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Congratulations on receiving the Frederic Ives Medal/Quinn Endowment award. How did your interest in the field of optical sciences begin?

When I was a physics grad student at Stanford, I got a one-term assignment to serve as grader for the undergrad optics course. My interest in optics was negligible then, and it got progressively smaller during the term. My personal focus at the time was on statistical physics and quantum mechanics. It took at least another decade for me to get smart enough to see that the combination of the two is almost the same thing as quantum optics.

Looking back at your work in quantum optics and radiation physics, what are you most proud of?

Some themes in the research of my group have been sufficiently interesting to leave an imprint in the form of a word or phrase that continues to be used in the literature, such as quantum revival and Bessel beam and entanglement sudden death, and these are nice markers. But the real answer to your question has to be my pride in the work of the bright post-docs and the students who have done Ph.D.s with me; they are really the ones responsible for anything remarkable.

As the founding editor of *Optics Express*, you were a champion of open-access publishing long before it became mainstream practice. What sparked your interest in those early days?

This is interesting because it allows me to emphasize what often gets

overlooked—namely that "open access" was not a phrase used with science journals when we started *Optics Express*, nor was it closely associated with *Optics Express*, at the time when we got started. The mandate from OSA was simply to create something in the way of electronic publishing, and it was up to me, along with my colleagues in the startup, to figure out what that would be. I'd say that our most important decisions, all against some push-back, came from our insistence that the product look and feel like a real journal open to research articles, which at that time diverged from anything else on the Web.

It meant that *Optics Express* should have a cover page, that consecutive page numbers should be imposed, that peer review should govern acceptance of submissions, and that a regular schedule should determine when the next issue would appear. I think that, miraculously, these were all correct, although quite novel for the Web, and they've all been adopted by most of the copycats that have followed.

You've been a professor for most of your career. What is the most challenging aspect of teaching for you? The most rewarding?

The most challenging element is easy to say—it is just to stay abreast, rarely ahead, of my students. The most rewarding element is always to see what surprising achievements they're capable of, during their thesis work and also later.

Can you give us a sneak preview of what you will discuss during your FiO plenary session and awards ceremony presentation?

It's a secret, of course. But let me say that I think I'll talk about an easy way to discover an apparently irreconcilable conflict between accepted facts usually associated with Euclid on the one hand and Malus on the other.

You've been a long-time leader at OSA, including a term as a president. Do you have any advice on how to inspire young optics-minded people in order to bring forth a new generation of leaders?

Optics and photonics, which I interpret from the perspective of quantum optics, is an area of physical science that is intrinsically challenging, frequently anti-intuitive, and sometimes rewarding in unexpected ways. What's not to like? Leaders will appear. ◭

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