Laudatio

For his seminal contributions to the role of classical mechanics
in quantum mechanics

Prof. Dr. Eric J. Heller

has been awarded the
Martin Gutzwiller Fellowship 2015/16
of the Max Planck Institute for the Physics of Complex Systems.

Always intrigued by time-dependent phenomena, Rick Heller started to formulate a time-dependent approach to semiclassics with a seminal paper in 1975, followed by work over the next decades on Gaussian wave packet dynamics, mostly applied in chemical physics.

He conquered semiclassical theory in physics with a seminal Physical Review Letter in 1984 on the structure of eigenfunctions with underlying classically chaotic dynamics.

The motive of random and chaotic waves he expanded in two ways. Firstly for the description of electron dynamics in nanostructures - his work on quantum corrals from 1994 is cited here exemplarily. Secondly, he ventured out into classical waves describing the generation of freak waves, for the ocean in 2008 and for microwave billards generated in the laboratory in 2010.

Recently, he has become increasingly interested in excited dynamics of condensed topical matter systems such as graphene.

Through all his scientific career he has come back to Gaussian wave packets recognizing them as an ideal mediator between quantum and classical physics, analytical and numerical work.

With his truly remarkable breadth, equally at home in physics and chemistry, with his intuition based on an unusually developed sense for graphics and colors, and with his mathematical rigor, Rick Heller has been an inspiration for many colleagues and has paved younger researchers a way into science.