

Whitehead Prize: citation for Tadahiro Oh

Short citation:

Professor Tadahiro Oh of the University of Edinburgh is awarded a Whitehead prize for his contributions to the theory of dispersive PDEs, in particular to the understanding of their interaction with random data.

Long citation:

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It has been known since the 1990s that it is possible to construct global low-regularity solutions for some dispersive PDEs by drawing their initial data randomly from suitable probability distributions. In a series of works with Colliander and others, Oh has greatly expanded our understanding of this phenomenon.

Another quantum leap was his 2018 work with Gubinelli and Koch in which they succeeded in constructing a natural type of solutions to the quadratic nonlinear wave equation driven by space-time white noise. This was the first time that the circle of recent ideas originating in the analysis of singular parabolic SPDEs was successfully applied to a hyperbolic problem that is too irregular for Bourgain's trick to lead to a well-behaved solution theory.

In a very recent series of beautiful works, Oh and his collaborators succeeded in proving a number of old conjectures around the construction (or impossibility thereof) of Gibbs measures for the focusing nonlinear Schrödinger equation. This study was pioneered in the late 1980s by Lebowitz–Rose–Speer and one direction was rigorously proven in the 1D case by Bourgain in 1994. Oh et al provided not only a complete treatment of the 1D case but even succeeded in dealing with the very interesting 3D case which had long remained out of reach.