

The **Wolfgang Pauli Institut & Institut CNRS Pauli** (UMI 2842 du CNRS)
and
the **Vienna Center for Partial Differential Equations &**
the FWF **DoktoratsKolleg „Dissipation and Dispersion in Nonlinear PDEs“**

invite to the

15. PAULI KOLLOQUIUM

Time: **Wednesday, 18. November 2015, 15h00**

Place: “HS 6”, 1st floor, Fak. Math., Oskar-Morgenstern-Platz 1, 1090 Wien

Pierre-Louis LIONS (Collège de France)

**“Some new classes of
nonlinear Kolmogorov equations”**

Abstract: We shall begin with a brief survey of the various types of nonlinear Kolmogorov equations which are being used in many contexts of science and engineering. Then, we shall describe a new class of such equations: roughly speaking they correspond to nonlinear Markov processes involving conditional expectations. And, we shall explain the known mathematical results and the main remaining open questions.



Ansgar Jüngel
(Speaker DK & PDE Center)

Norbert J Mauser
(Director WPI & ICP)

Pierre-Louis Lions (Collège de France)

<http://www.college-de-france.fr/site/en-pierre-louis-lions/>

Short Biography:

Pierre-Louis Lions received his doctorate from the [Université Paris 6 “Pierre and Marie Curie”](#) in 1979, directed by H. Brezis. His large field of research interests around the theory of nonlinear [partial differential equations](#) ranges from (quantum) physics, fluid mechanics to mathematics of economy and finance. P.-L. Lions, together with R. DiPerna, was the first to prove global (renormalized) solutions to the [Boltzmann equation](#).

In 1994 he received the [Fields Medal](#). Other awards Lions received include the IBM Prize in 1987 and the Philip Morris Prize in 1991. He is a doctor honoris causa of Heriot-Watt University (Edinburgh) and of the City University of Hong-Kong. He is a member of the Académie de sciences and Commandeur de la Légion d'Honneur. Currently, he holds the chair of [Partial differential equations and their applications](#) at the [Collège de France](#) in Paris as well as a position at the [CEREMADE](#) at Université Paris 9 “Dauphine” and at [Ecole Polytechnique](#).

In the paper "viscosity solutions of Hamilton-Jacobi equations", with M. Crandall, he introduced the notion of [viscosity solutions](#). Another key technique developed by Lions is “concentration compactness”; he introduced certain measures to handle the concentrations, including the Wigner measure. Currently he is interested e.g. in “mean field games” applied e.g. in mathematical finance. He is on the editorial board of around 25 international journals. His enormous impact on mathematics is enhanced by the school of his PhD students, starting from M. Esteban and B. Perthame and including C. Villani, his participation in European projects (like the [HYKE network](#)) and his activity in boards both in industry and academic research (including the board of the WPI).
