

Emmanuel Trélat is Professor at University Pierre et Marie Curie, lab. Jacques-Louis Lions. He is member of Institut Universitaire de France, and is also the director of the Fondation Sciences Mathématiques de Paris. He has got the SIAM Outstanding Paper Prize in 2006, the Maurice Audin Prize in 2010, the Felix Klein Prize (EMS) in 2012, and the Blaise Pascal Prize (Academy of Science) in 2014.

He is an expert of mathematical control theory, both in finite and infinite dimension, and has developed many industrial connections. In particular the Felix Klein prize acknowledged his important contributions to aerospace industry: he wrote a software for Airbus Defence & Space (formerly, EADS Astrium), computing automatically and instantaneously the optimal trajectories for the problem of minimal consumption for the last stage of an Ariane launcher. The approach is based on a combination of the Pontryagin Maximum Principle in optimal control with numerical continuation methods and with a refined geometric analysis of the extremal flow. This real-time algorithm, now used by Airbus, brought an outstanding improvement for Ariane 5 trajectory planning and allows also to consider new strategies for the forthcoming Ariane 6 launchers.