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Michael Robert Herman, 1942–2000

The untimely death of Michael Robert Herman in November 2000 deprived the scientific community of one of its deepest mathematical minds, who had a profound impact on the theory of dynamical systems over the last 30 years.

Born in New York, he was educated in France. He was a student at École Polytechnique before being one of the first members of the Centre de Mathématiques created there by Laurent Schwartz. For more than 20 years, his seminar had a major influence worldwide and was the main vector of the development of the theory of dynamical systems in France. All of his students remember with thankfulness and emotion the passion with which he led them into the wonderful mathematical world. He maintained through the years strong connections with the Instituto de Matemática Pura e Aplicada in Rio de Janeiro.

His interests covered most aspects of the modern theory of dynamical systems and much beyond that, from economics to arts and philosophy. However, it is fair to say that from the start the so-called small divisors problems, related in particular to the stability of quasiperiodic motions, were closest to his heart. His epoch-making theorem on the linearization of circle diffeomorphisms [**1–4**]†, his two volumes [**5, 6**] on invariant curves for twist diffeomorphisms, which are still the standard reference 20 years later, his very many deep contributions on the existence and geometry of invariant tori all bear witness to that interest [**7–10**].

His new method [**11, 12**] for bounding from below Lyapunov exponents through subharmonicity has had deep developments.

He was also a master of the subtle counterexample, as his construction [**13, 14**] for the smooth Hamiltonian closing lemma testifies.

Hopefully this volume reflects the variety of his interests and the frontier of present research, the drawing of which he contributed decisively.

Michael was also one of the founding editors of *Ergodic Theory & Dynamical Systems*. He helped set up high standards for the journal. We have tried to keep these very high standards in this volume.

A. Fathi
J.-C. Yoccoz

† Numbers refer to the list of Herman's published papers that follow this introduction.

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