

# Preface

The articles in this special issue of Communications in Mathematical Sciences were written for the first meeting of the GdR GRIP (Research Group on Particle Interactions) held in Paris in May 2003.

The GRIP research group has been funded by CNRS (the French national agency for scientific research) since 2003; its main purpose is to foster interactions between analysts and probabilists working on the dynamics of large particle systems.

Two mini-courses were organized during this meeting:

- Jean-François Collet presented a survey on PDE models of particle dynamics, such as the Lifshitz-Slyozov and Becker-Döring models; and
- James Norris devoted his course to a derivation of the Smoluchowski equation starting from a stochastic microscopic model.

More specialized talks were delivered by Nicolas Fournier, Bénédicte Haas, Benjamin Jourdain, Bertrand Maury, Barbara Niethammer, Philippe Villedieu. In particular, the scientific committee of GRIP insisted on mixing young researchers with confirmed scientists, providing the former with the opportunity of presenting their current research to a wide community of applied mathematicians.

Our heartfelt thanks go to the speakers, who contributed to the success of this first meeting in more than one way, and especially in providing us with written accounts of their talks within a few weeks after the conference; we also thank the referees who reviewed this material in a very short time. Thanks to their joint efforts, we believe that this issue offers a timely picture of a very active area in applied mathematics.

We express our gratitude to CNRS for its support — both in terms of funding, and in providing true incentive in favor of interdisciplinary cooperation effort as in GRIP.

We are also grateful to both universities Paris VI and VII for hosting this meeting on their joint Chevaleret campus, and especially to the Paris VI Laboratoire Jacques-Louis Lions (UMR 7598) and to the joint Paris VI-Paris VII Laboratoire Probabilités et Modèles Aléatoires (UMR 7599) for their generous support.

We also thank the European network HyKE for making this meeting one of its “scientific events”, as well as Mrs. Soledad Cuenca and Valérie Hemeidan from Université Lille I (Laboratoire Paul Painlevé, UMR 8524) for helping us on administrative issues.

Finally, it is our pleasant duty to thank Prof. Shi Jin for inviting us to publish the proceedings of this conference as a special issue of the Communications in Mathematical Sciences.

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