Guest Editors' Preface

Arieh Iserles was educated in Israel, gaining BSc and MSc degrees from Hebrew University and writing his Ph.D. dissertation, *Numerical Solution of Stiff Differential Equations*, at Ben Gurion University in 1978 under the supervision of Giacomo Della Riccia. He then moved to Cambridge University where he has remained (apart from scientific travels, the word *holiday* is not one of his favorites) ever since, being elected to a chair in 1999. Arieh's research record speaks for itself, but his contribution is far greater than this because of two outstanding features: his warm and generous personality, and his enormous devotion to the world of numerical analysis in the widest sense. All of us vividly remember our first meeting with Arieh and are very grateful for the many ways he has helped us and numerous others since then. He is unfailingly engaged, enthusiastic, and supportive of young research students and new ideas; he has an opinion on everything. He loves brainstorming at the whiteboard and will always tell you of his most recent discovery, often just days old that beats everything he has ever done. He never sleeps.

The papers in these two special issues reflect the breadth of Arieh's interests, influence, and friendships, and it is appropriate that they appear here in *FoCM*, for Arieh was a founder, on-going board member, and editor for the very broad-ranging Society for the Foundations of Computational Mathematics. His FoCM colleague, Peter Olver, writes on algorithms for differential invariants [8]. We [12] and Blanes, Casas, and Murua [5] write on splitting and composition methods; Arieh first wrote on composition methods in 1982 [1]. His former students, Moan and Niesen, write on the Magnus series [13] and his former postdoc, Celledoni, writes on exponential integrators [7]; Arieh first studied integrators using exponentials and Lie brackets in 1984 [2]. Baxter [4] and Dyn, Iske and Wendland [9] write on approximation theory (radial basis functions and meshfree thinning, respectively). The paper by Bloch et al. [6] on control in Lie groups reflects Arieh's early and on-going interest in numerical methods in Lie groups; his review article in *Acta Numerica* [3] has been cited 120 times. Indeed, *Acta Numerica* as a whole has been cited 4,100 times since Arieh founded it in 1992, a measure of its immediate and on-going influence [14]. Two papers on numerical PDEs cover the foundations of their structure (Mansfield and Hydon on difference forms [11]) and the long-time behavior of their solutions (Hairer and Lubich on nonlinear wave equations [10]).

Happy birthday, Arieh!

Robert McLachlan, Hans Munthe-Kaas, Reinout Quispel, and Antonella Zanna

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