Preface

It is our great pleasure to present this book in celebration of the 60th birthday of Arjan van der Schaft. Arjan received his M.Sc. degree in Mathematics with honors in 1979 from the University of Groningen. Subsequently, he pursued his doctoral degree, also in Mathematics at the University of Groningen, under the tutelage of the late Jan C. Willems. His doctoral thesis, System Theoretic Descriptions of Physical Systems, was completed in 1983. Quite remarkably, he started his academic career as an Assistant Professor in Applied Mathematics at the University of Twente in 1982, before his doctoral thesis was written. We have to note, however, that at this point, Arjan had already published seven journal papers on control theory. At Twente, Arjan's academic career went all the way up to Full Professor at the Chair of Mathematical Systems and Control Theory. In 2005, Arjan's academic career came to a full circle, when he returned to the University of Groningen as Full Professor.

Over the past 30 years, Arjan's footprint in the field of systems and control theory has been deep and extensive. The books "Nonlinear Dynamical Control Systems (with Henk Nijmeijer), "L_2-gain and Passivity in Nonlinear Control", sole-authored by Arjan, and "An Introduction to Hybrid Dynamical Systems" (with Hans Schumacher), all had great impact in the field. Arjan's impact on H_∞ control for nonlinear systems is witnessed by his paper "L_2-gain Analysis of Nonlinear Systems and Nonlinear State-Feedback H_∞ Control", which was recognized as the Dutch research paper in international technical sciences journals with the largest number of citations during the period 1994–1998. Furthermore, Arjan is one of the founders (with Bernhard Maschke) of port-Hamiltonian systems theory; a comprehensive and influential theory for mathematical modelling, analysis, simulation and control of complex multiphysics systems. This theory offers new paradigms for control (energy-shaping, interconnection-shaping, control by interconnection), and has been applied to many areas: from robotics, mechatronics, power systems, to chemical reaction networks. The systems and control community recognizes Arjan's excellence in research and academic leadership. He was inaugurated as a Fellow of the IEEE in 2002, invited as a keynote speaker at the International Congress of Mathematicians in 2006, was rewarded with the SICE Takeda Best

Paper Prize (with Noboru Sakamoto) in 2008, and was awarded the three-yearly Certificate of Excellent Achievements from the IFAC Technical Committee on Nonlinear Systems in 2013.

Looking back, we recognize that Arjan's scientific legacy is not only his hundreds of peer-reviewed papers and half a dozen technical books, but also around three dozen young researchers (Ph.D. students and post-doctoral researchers) whose careers benefitted from his tutelage and collaboration. To celebrate this milestone in Arjan's academic life, we present this book to our colleague and teacher, Arjan van der Schaft, with affection and admiration and our best wishes for several decades more of top-level scientific productivity.

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