

The Continuing Legacy of Roger W. Brockett

Preface to the Special Issues



This is the first of four special issues dedicated to Professor Roger W. Brockett, a pioneering researcher and educator, in the field of Systems, Control and Communication.

Roger W. Brockett received the Ph.D. degree from Case Institute of Technology in 1964. From 1963 to 1967 he was an Assistant Professor of Electrical Engineering at MIT, and from 1967 to 1969 he was an Associate Professor of Electrical Engineering. Since 1969 he has been on the faculty of Harvard University, first as Gordon McKay Professor of Applied Mathematics in the Division of Engineering and Applied Physics, and, since 1989 as An Wang Professor of Electrical Engineering and Computer Science. He has held a number of visiting positions all over the world, including Warwick

University, Imperial College, University of Rome, Washington University, University of Groningen, University of Florida, University of Nagoya, Australian National University, Ben Gurion University, University of Bremen, and Tokyo Institute of Technology.

Roger Brockett has made leading contributions to a wide range of subjects including:

1. stability of nonlinear feedback systems;
2. geometric control theory;
3. stochastic systems and nonlinear filtering;
4. applications of Lie theory to nonlinear systems and control;
5. robotics;
6. formal languages for motion description;
7. computer vision;
8. geodesic and gradient flows on manifolds;
9. information based control and specification complexity;
10. minimum attention control and quantum control.

In recognition of these and other contributions, he has received awards including: the Donald P. Eckman award (1967) and the Richard E. Bellman Control Heritage award (1989) from the American Automatic Control Council, the IEEE Control Systems Science and Engineering award (1991), the W.T. and Idalia Reid prize from SIAM (1996), the Rufus Oldenburger medal from ASME (2005), and elected membership in the U.S. National Academy of Engineering (1991). Most recently, he has been selected to receive the IEEE Leon Kirchmayer Graduate Education Award for 2009, for his extensive contributions as a teacher in the classroom, as an expositor of fundamental ideas in system science and engineering, and as the thesis advisor for more than sixty Ph.D. students, many of whom have gone onto distinguished careers