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Introduction

"*I trust my equations more than I trust your computer*"— *Terry Alfriend*

At first, the quote may come across as presumptuous but if you know the man, you realize it is not presumptuous at all. In fact, that quote embodies a philosophy that all young scientists and engineers should hear: if you can use mathematical relationships to describe a system, then you can explain its behavior and can be said to understand the system. Dr. Kyle T. (Terry) Alfriend has a special gift for breaking complex dynamical problems down to their purest form and using equations to garner understanding and physical insight.

For more than 40 years, Terry Alfriend has been making key contributions to our understanding of the flight mechanics and control of space vehicles. His career includes an unusually rich mix of experience in academia, industry, and government. His innovations appear prominently in subjects as diverse as analytical celestial mechanics, satellite formation flying, attitude dynamics and control, surveillance of space, probabilistic problems in astrodynamics including probability-of-collision formulations used by NASA to ensure safety of manned space flight, and application of space systems to intelligence, surveillance, and reconnaissance. It is remarkable that articles from every phase of his career continue to be cited regularly at conferences and in journals.

This volume of *The Journal of the Astronautical Sciences* contains articles from articles at the AAS Alfriend Astrodynamics Symposium held 17–19 May 2010 at the Monterey Plaza Hotel to honor Dr. Alfriend. The symposium organizers would like to thank all of the authors and participants for making it an outstanding event, the AAS Space Flight Mechanics Committee for providing use of the conference management system, and to Univelt for publishing the proceedings. We would also like to thank Bonnie Alfriend for too many things to mention.

Most importantly, this special edition journal volume is for those of us following in Terry's footsteps. Terry is truly a leader in our field and the contents of this volume provide insight into the depth and breadth of his expertise and influence. The understanding one obtains from Terry's approach is far greater than what is possible through pure computer simulation. "This is what the simulation gave me" is never an acceptable answer to "Why?"

Terry, we honor you, thank you, and look forward to several more decades of contributions.

Shannon Coffey
John Junkins
Kim Luu
Mike Ross
Chris Sabol
Paul Schumacher