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Dr. Chris G. Bartone, P.E. is an Associate Professor at Ohio University with over 25 years of profession experience in communications, navigation, and surveillance systems. He received his Ph.D.EE from Ohio University in 1998, a MSEE from the Naval Postgraduate School in 1987, and BSEE from Penn State in 1983. He previously worked for the Naval Air Warfare Center, performing RDT&E on CNS systems. Chris received the RTCA William E. Jackson Award in 1998 for his outstanding contribution to aviation in the area of DGPS. At Ohio University, Dr. Bartone has developed and teaches a number of GPS, radar, and wave propagation classes, including:

- EE605 Advanced Satellite Navigation
- EE613 High Accuracy Satellite Navigations
- EE601 Electromagnetic Wave Propagation for Electronic Navigation Systems
- EE541 Antennas
- EE602 Radar Systems.

His research concentrates on all aspects of navigation. . He is a member of the ION, the IEEE, SAE, and the Association Old Crows. He is very active with the ION; chaired several programs; Chair, ION Outreach Committee; and Editor, ION Virtual Navigation Museum. Chris is a licensed profession engineer in the state of Ohio.



Prof. Richard B. Langley has been teaching and conducting research at the University of New Brunswick since 1981. He has a B.Sc. in applied physics from the University of Waterloo and a Ph.D. in experimental space science from York University, Toronto. He is a co-author of the best-selling “Guide to GPS Positioning” published by Canadian GPS Associates and has been a columnist and contributing editor of *GPS World* magazine since its inception. His research team is currently working on a number of GNSS-related projects including the study of atmospheric effects on GNSS, space-based augmentation systems, other error mitigation techniques, and the development of applications for space-borne GNSS. Prof. Langley is an ION fellow and a co-recipient of the ION Burka Award and recipient of the ION Kepler Award.

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Dr Peter Dare joined the Department of Geodesy and Geomatics Engineering at the University of New Brunswick (UNB) in August 2000 and is the current chair of the department. Before joining UNB he worked in the School of Surveying, University of East London, England. He gained a BSc in Land Surveying Sciences from North East London Polytechnic in 1980, a MASc in Civil Engineering from the University of Toronto in 1983 and a PhD from the School of Surveying, University of East London in 1995. He has significant expertise in Geodesy, GPS, Operational Research, and Geomatics. Peter is a member of the ION, Canadian Institute of Geomatics, American Geophysical Union, Canadian Geophysical Union, and is a Fellow of the Royal Institution of Chartered Surveyors. Peter is active on committees of the Royal Institution of Chartered Surveyors, International Federation of Surveyors, International Earth Rotation Service, and the International Association of Geodesy.



Dr. Hans-Jürgen Euler has over 23 years of experience with GPS and its applications including precise surveying in post-processing and real-time. In the late 80's, while still a Ph.D student at Technical University of Darmstadt, Germany, he pioneered the fast integer ambiguity resolution technique by reducing the required algorithm initialization times from hours to minutes. These fundamental methods are still the key factor for fast and robust phase integer ambiguity resolution.. In 1990 he worked at The Ohio State University on inertial with kinematic GPS followed by developments for real-time applications at Terrasat, Germany. During 14 years at Leica Geosystems he developed the GPS algorithms for real-time and post-processing software. In 2002 he became a Leica GNSS Research Fellow. For more than 10 years he worked in the RTCM Subcommittee 104 on interoperable standards, where he serves as Chair of the RTCM SC104 working groups for network RTK and Galileo. Today Hans-Jürgen works for his own company inPosition gmbh in Switzerland. He consults and concentrates on development for positioning applications with a particular focus on GNSS including Network RTK.

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Dr Tony Pratt has over 40 year of experience. He graduated with a B.Sc. and Ph.D. in Electrical Engineering from Birmingham University, UK in 1967. He has held teaching positions at Loughborough University, UK, Yale University; IIT, New Delhi, University of Copenhagen, and University of Nottingham; teaching in the areas of signal processing, electronics, probability theory, and satellite navigation system design. He has worked for or consulted to industry for Navstar Ltd, Peek, Parthus, QinetiQ Ltd, UK, Cambridge Positioning Systems, now part of the CSR plc group. Dr. Pratt is a Consultant to the UK Government in the development of the Galileo Satellite System and has played key roles in the signal design and international negotiations. He runs two companies, OrbStar Consultants and OrbStar Ltd providing various services to the GNSS sector. Dr Pratt has published numerous papers on signal processing, sonar, and satellite navigation. He holds over 17 patents.



Dr. Christophe Macabiau graduated as an electronics engineer in 1992 from the ENAC (Ecole Nationale de l'Aviation Civile) in Toulouse, France. Since 1994, he has been working on the application of satellite navigation techniques to civil aviation. He received his Ph.D. in 1997 and has been in charge of the signal processing lab of the ENAC since 2000. His research now also applies to vehicular, pedestrian and space applications, and includes advanced GNSS signal processing techniques for acquisition, tracking, interference and multipath mitigation, GNSS integrity, as well as integrated GNSS-inertial systems and indoor GNSS techniques.



Dr. Olivier Julien is an assistant professor with the Signal Processing and Telecommunications laboratory of ENAC, Toulouse, France. He received his PhD from the Department of Geomatics Engineering at the University of Calgary, Canada. He is involved in many R&D projects including GNSS receiver design, multipath and interference mitigation techniques, and GNSS interoperability. He is the recipient of the 2006 Bradford W. Parkinson award.

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Dr. Ben Peterson co-chaired the FAA's Loran Integrity and Accuracy Performance Panels (LORIPP and LORAPP) and as such is one of the principal architects of Enhanced Loran (eLoran) in the US. He developed the Loran Data Channel for transmitting time of day and differential Loran corrections. Prior to his retirement from the US Coast Guard (USCG) in 2000, he was a Captain and Engineering Department Head at the USCG Academy. He is an USCG Academy graduate and earned a Ph.D. in Electrical Engineering from Yale University. He is a former president of the US ION, an ION Fellow, and an associate editor of ION Navigation Journal.



Dr. Demetrios Matsakis is Head of the U.S. Naval Observatory's Time Service Department and has been employed at the USNO for almost 30 years. He has worked on time scales, atomic fountains, trapped-ion clocks, pulsars, VLBI (Very Long Baseline Interferometry), CEI (Connected Element Interferometry), atmospheric modeling, water vapor radiometers, maser amplifiers, and molecular radio astronomy. He received his Ph.D. in Physics at U.C. Berkeley studying under Dr. Charles Townes and his undergraduate degree in Physics from MIT. Dr. Matsakis has published over 100 scientific papers, and is ex-President of the International Astronomical Union's Commission on Time. He teaches in a private capacity.



Sergey G. Revnivych is Deputy Director General of the Central Research Institute of Machine Building, leading institute of Federal Space Agency, head of PNT Analysis and Information Center. He is a member of the management of the Federal GLONASS Program. Graduated Moscow Aviation Institute, flight dynamic engineer in 1978. Received Ph.D. degree in Moscow Aviation Institute in 2006.

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Dr. Sergey Karutin earned his M.S and Ph. D. degree in Electronics from Bauman Moscow State Technical University, where he is an assistant professor now. He started as a software engineer in Russian Institute of Space Device Engineering and his first project was GLONASS/GPS attitude determination receiver. He is currently deputy head of satellite navigation division and mainly responsible for GLONASS and augmentation development, as well as new indoor applications.



Thomas A. Stansell is a pioneer of satellite navigation with over 49 years of experience, beginning in 1960 at the Johns Hopkins University Applied Physics Laboratory where he helped develop the Transit Navigation Satellite System, particularly the world's first surface ship satellite navigation receiver and the world's first portable Doppler geodetic survey instrument. At Magnavox, as a staff VP, he led developments including firsts in: microprocessor-based satellite navigation and survey receivers, multi-channel GPS/GLONASS receivers, codeless tracking of L2, and "all-digital" GPS receivers. As a VP of Leica Geosystems, he continued GPS technology development, including patents for GPS multipath mitigation. He has played a key role and contributed crucial ideas to the design of all modernized GPS signals: L5, L2C, M-code, and L1C, including a lead role for L2C and L1C, receiving the GPS JPO 2002 GPS Navstar Award. Tom is an ION Fellow and has received the ION Kepler and IEEE PLANS Kershner Awards. Today, Tom is an influential GPS consultant advising the GPS Wing on modernization issues and participating in international compatibility and interoperability working groups.



Dr. Kevin Dutton received his BS in Aeronautical Engineering from Rensselaer Polytechnic Institute in 1988 and his MS degree in Astronautics from the George Washington University in 1993. In 1989 he began work at NASA Langley Research Center on advanced spacecraft trajectory optimization. In 1993 he worked in the area of GPS to obtain his PhD in EE from Ohio University in 2003, studying various aspects of the GPS and INS, including attitude determination, relative navigation, and tightly coupled

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	GPS/INS Kalman filter design. In 2004, Dr. Dutton accepted a position with Honeywell in Clearwater, Florida as the lead designer of the Sea-Based JPALS GPS/INS relative navigation Kalman filter.
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Dr. Andrey Soloviev is a Senior Research Engineer at the Ohio University Avionics Engineering Center. He has received B.S. and M.S. in Applied Mathematics and Physics from Moscow University of Physics and Technology and a Ph.D. in Electrical Engineering from Ohio University. His current research focuses on multi-sensor integration including deep GPS/inertial integration for consistent carrier phase tracking of very weak GPS signals and LASer RaDAR (LADAR)/inertial integration for GNSS denied applications. Andrey received the RTCA William E. Jackson Award in 2002 for the development of frequency-domain INS algorithms and the ION Early Achievement Award in 2006 for outstanding contributions to deeply integrated Inertial/GNSS and advanced GNSS signal processing.



Mohinder S. Grewal, Ph.D., P.E., is a Professor of Electrical Engineering at California State University, Fullerton (CSUF) and has over 35 years experience in systems identification, guidance, navigation, and control. He was an architect of the GEO Uplink Subsystem (GUS) for WAAS, including the GUS clock steering algorithm. He co-authored "Kalman Filtering Theory & Practice Using MATLAB," *Second Edition*, Wiley & Sons, 2001. Dr. Grewal also co-authored "Global Positioning Systems, Inertial Navigation, & Integration," *Second Edition*, Wiley & Sons, 2007. Grewal has published over 50 papers in IEEE and ION refereed journals and proceedings, including the ION "Redbook," (Volume VI), and over 250 technical reports. He has been invited to author and co-author several papers on Kalman filtering and its applications for IEEE Control Systems Magazine's planned special issues on Kalman filtering, (2009 and 2010) to coincide with the 50th anniversary of the development of the Kalman filter. He is a registered engineer in the State of California. The CSUF Minority Engineering Student Association (MESA) awarded him the "Distinguished Professor of the Year" in 2001. Dr. Grewal is a Senior Member of IEEE, Fellow of the Institute for the Advancement of Engineering, and member of the Institute of Navigation.

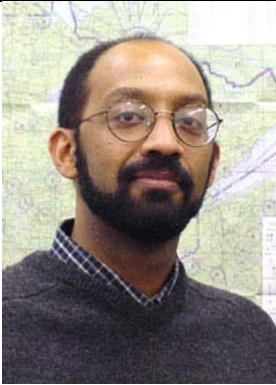
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Dr. Gebre-Egziabher is an assistant professor of Aerospace Engineering and Mechanics at the University of Minnesota, in Minneapolis, Minnesota. His research is in the areas navigation, guidance and control with a particular emphasis on application of estimation theory to avionics sensor fusion and system integration issues. Dr. Gebre-Egziabher received a Bachelor of Science degree in Aerospace Engineering from the University of Arizona, a Master of Science degree in Mechanical Engineering from George Washington University and a Ph.D. in Aeronautics and Astronautics from Stanford University.



Dr. David Bevly received his B.S. from Texas A&M University in 1995, M.S from Massachusetts Institute of Technology in 1997, and Ph.D. from Stanford University in 2001 in mechanical engineering. He joined the faculty of the Department of Mechanical Engineering at Auburn University in 2001 as an assistant professor. Dr. Bevly's research focuses on vehicle dynamics as well as modeling, control, and navigation of ground vehicle systems. Specifically, Dr. Bevly has developed methods for identifying critical vehicle parameters using GPS and inertial sensors as well as algorithms for control of off-road vehicles including participation in the past DARPA Grand Challenges.



Dr. Rama Rao is a Principal Engineer at the MITRE Corporation where he works in areas related to antenna technology for GNSS, EHF military satellite communications systems and terrestrial communications. He received his Ph. D degree from Harvard University where he also served as an Assistant Professor of Applied Physics. Prior to joining MITRE he held technical staff positions at M. I. T. Lincoln Laboratory and at the Sperry Research Center and was also a Research Associate at M.I.T. and an Adjunct Professor at Northeastern University in Boston. Dr. Rao holds nine U.S. patents and also has a tenth patent that is pending. His last two patents are related to GPS antennas.

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Dr. James L. Farrell (MS, UCLA, 1961; Ph.D., U. of MD, 1967) is a former ION Air Nav Representative, senior member of IEEE, former local board member of AIAA, registered professional engineer in Maryland, and member of various scholastic honorary fraternities. Technical experience includes teaching appointments at Marquette and UCLA, two years each at Minneapolis Honeywell and Bendix-Pacific, plus 31 years at Westinghouse in design, simulation, and validation/test for modern estimation algorithms in navigation and tracking applications [e.g., F16, AFTI, B1 phased array radar, SDI; tank fire control system design for US Army, generation of test data for bench validation; INS update and transfer alignment algorithm design, development of programs for USAF-WPAFB (director fire control evaluation) and for NASA (orbit & attitude determination, rotation coupled with structural deformation of Radio Astronomy Explorer); optimization of missile guidance and MLE boundaries] and digital communication design (synchronization, carrier tracking, decode). He is author of INTEGRATED AIRCRAFT NAVIGATION (Academic Press, 1976; now in paperback after five hard-cover printings), and of GNSS AIDED NAVIGATION AND TRACKING (2007), as well as chapters in books edited by C.T. Leondes and Cary Spitzer. He is a former columnist for WASHINGTON TECHNOLOGY, and has written over 80 journal and conference manuscripts. Active in RTCA (Washington D.C.) for the past several years, he served as co-chairman of Working Group #5 (Fault Detection and Isolation) within Special Committee SC-159 for GPS Integrity. Teaching activities over the past decade include seminars sponsored by Navtech, by the IEEE Position Location And Navigation Symposium (PLANS) and by his own company. As president and technical director of VIGIL Inc. in Severna Park MD., he has continued his teaching (on University campus as well as in both industry and conference seminars), while consulting for private industry, DOD, and University research.

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