

2018 DGON Inertial Sensors and Systems (ISS 2018)

**Braunschweig, Germany
11 – 12 September 2018**



**IEEE Catalog Number: CFP1857W-POD
ISBN: 978-1-5386-6084-3**

**Copyright © 2018 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved**

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number:	CFP1857W-POD
ISBN (Print-On-Demand):	978-1-5386-6084-3
ISBN (Online):	978-1-5386-6083-6
ISSN:	2377-3464

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

CURRAN ASSOCIATES INC.
proceedings
.com

TABLE OF CONTENTS

		Reference
	Editors Preface	iii
	Table of Contents	iv
	Author's Index	vii
P01	Sensitivity enhancement of a mode-locked ring laser gyroscope by giant intracavity dispersion <i>M. Lenzner, J. Hendrie, H. Afkhamiardakani, L. Horstman, N. Hsu, J.-C. Diels, L. Arissian</i>	1
P02	Improvements to signal processing and component miniaturization of compact resonator fiber optic gyroscopes <i>Glen A. Sanders, Lee K. Strandjord, Wes Williams, Earl Benser, S. Ayotte, F. Costin</i>	13
P03	Reduction of thermal strain induced rate error for navigation grade fiber optic gyroscope <i>B. Osunluk, S. Ogut, E. Ozbay</i>	35
P04	Strapdown inertial north and latitude finder <i>V. Avrutov, S. Davydenko, V. Tsisarzh</i>	45
P05	The world smallest, most accurate and reliable pure inertial navigator: ONYX™ <i>B. Deleaux, Y. Lenoir</i>	55
P06	Strapdown inertial navigation system of minimum dimension (3D oscillator as a complete inertial sensor) <i>Ph. Zhuravlev, S. Perelyaev, D. Borodulin</i>	79
P07	Multi-Degree-of-Freedom MEMS Coriolis Vibratory Gyroscopes Designed for Dynamic Range, Robustness, and Sensitivity <i>A. Efimovskaya, A. M. Shkel</i>	92
P08	Reduction of vibration and mechanical shocks in MEMS gyroscopes for space application <i>M. Jandak, M. Vagner, T. Neuzil</i>	109

P09	A resonant frequency shift quartz accelerometer with 1st order frequency $\Delta\Sigma$ modulators for a high performance MEMS IMU <i>M. Todorokihara, K. Sato, Y. Kobayashi</i>	123
P10	Behavioral performance during vibration and shock for a tactical grade IMU <i>R. Holm, H. Schou, H. R. Petersen, M. Horntvedt</i>	138
P11	Analysis and simulation of phase errors in quadrature cancellation techniques for MEMS capacitive gyroscopes <i>A. Omar, A. Elshennawy, A. Ismail</i>	157
P12	Digital architecture for vibrating inertial sensors: modularity, performances, self-calibrations <i>L. Delahaye, J. Guérard, F. Parrain</i>	174
P13	Visual inertial hybridization technique based on Beacons identified by deep learning <i>V. Demange, J. Nicolaou, F. Delhay, E. Robert, J. Budin</i>	187
P14	Qualification of a new CVG-based inertial reference unit in a combined stellar-inertial attitude determination system for space applications <i>F. Schuh, M. Rößler, T. Haarlammert, F. Ahlendorf, J. Riedel, J. Gröbel, T. Jacobs, B. Wolf</i>	210
P15	SLAM for direct optimization based visual-inertial fusion <i>M. Schwaab, E. Brohammer, Y. Manoli</i>	228
P16	Fast RodFilter for precision attitude computation <i>Y. Wu</i>	248
P17	Novel robust generalized high-degree cubature kalman filter for transfer alignment <i>K. Wang, Y. Zhang, Y. Wang, W. Gao, H. Gao</i>	264
P18	Electrically integrated miniature motion tracking module with multiple external GNSS receiver support <i>M. Crabolu, M. Giuberti, G. Bellusci</i>	280
P19	In-motion alignment algorithm of strapdown inertial navigation systems <i>A.C.V. Gonçalves, M.F.D. Pinto, P.C. Pellanda</i>	293

P20	An advanced ITAR-Free INS/GPS designed and developed in Italy <i>G. Mattei, F. Scibona, L. Rosa, M. Lucchesini, A. Esposito, D. Tonelli</i>	313
-----	--	-----

P21	An integrated gravimetric system to measure absolute gravity aboard a moving base <i>A. Sokolov, A. Krasnov</i>	330
-----	--	-----

P22	Development of inertial sensors for AHRS considering DO-254 <i>U. Herberth, J. Rende, H. Lutz</i>	345
-----	--	-----

Poster

PP1	An optimal tightly-coupled stellar/inertial integrated navigation method for daytime application <i>D. Dai, W. Tan, W. Wu, X. Wang, S. Qin</i>	364
-----	---	-----

PP2	An analysis of the effect of gravity anomaly to attitude estimation in high-precision GNSS/INS integrated navigation systems under overturning cases <i>H. Xiong, Y. Zhao, X. Wang, D. Dai, J. Zheng</i>	378
-----	---	-----

PP3	Research on optimum modulation phase of interferometric fiber optic gyroscope in the space radiation <i>H. Gao, W. Gao, G. Wang, J. Sun</i>	393
-----	--	-----

PP4	Noise suppression method of rotating accelerometer gravity gradiometer instrument based on oversampling <i>D. Li, W. Gao, Z. Li, Y. Yang, G. Chen</i>	404
-----	--	-----

PP5	Effect of temperature sensitivity of coating adhesive on thermal induced non-reciprocal bias in fiber optic gyroscopes <i>X. Wang, S. Yang, Y. Zhang, X. Wu, X. Zhao</i>	418
-----	---	-----