

2024 DGON Inertial Sensors and Applications (ISA 2024)

**Braunschweig, Germany
22-23 October 2024**



**IEEE Catalog Number: CFP2457W-POD
ISBN: 979-8-3503-8752-0**

**Copyright © 2024 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:	CFP2457W-POD
ISBN (Print-On-Demand):	979-8-3503-8752-0
ISBN (Online):	979-8-3503-8751-3
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
Performance Evaluation of Quantum Accelerometers for Space Navigation <i>Alireza Hosseiniarani, Arpetha C. Sreekantaiah, Benjamin Tennstedt, Xingchi He, Urs Hugentobler and Steffen Schön</i>	1
Validating the Integrated Motion Measurement of Flexible Beams <i>M. Kohl, J. F. Wagner</i>	18
Analyzing show jumping horses by IMU- and GNSS-sensor Fusion <i>C. Fercher, B. Fasel, G. Lang and M. Schmidt</i>	39
Top-Down Derivation of Performance Requirements for Inertial Navigation Systems <i>L. Schmitt</i>	55
Tightly Coupled Integration as a Strategy for Robust Navigation: Civitanavi Systems' Approach <i>M. Pini, F. Corrado, G. Marucco, R. Senatore, M. Perlmutter and A. Pizzarulli</i>	75
Concept for System Performance Verification of INS/GNSS Solutions within GNSS denied Environments <i>E. v. Hinüber, L. Jung, M. Rehermann and I. Bezold</i>	90
A LIDAR/INS SLAM Method Based on the PHD Filter <i>Z. Zhang, T. Zhang</i>	106
A Detailed Journey from Tactical to High-End Navigation-Grade MEMS Accelerometers at EMCORE <i>Sergey Zotov</i>	124

High-Performance 100g Accelerometer with Integrated Electronics in 3 cm x 3 cm form factor	143
<i>T. Miani, L. Gurung, N. MacCarthy, D. Young, G. Sobreviela-Falces, C. Baker, A. Seshia</i>	
High-Performance triaxial MEMS Accelerometer for Applications with Harsh Environmental Conditions	151
<i>S. Nessler, M. bin Mansoor, R. Grumann, M. Ruf, A. Jäckle, T. Kirsch, S. Bange, S. König, S. Rombach</i>	
High-end MEMS Gyroscopes: Challenges on Mechanical Design?	171
<i>C. Viola, C. Comi, V. Zega, P. Peliti, F. Berton, G. Gattere, L. Falorni, A. Corigliano</i>	
Compact Digital Symmetric MEMS Vibrating Structure Gyroscope	182
<i>A. Dorian Challoner, Mark G. Marshall</i>	
Applying Method of Averaging to a Harmonically and Parametrically Excited HRG with FTR Control	195
<i>D.O. Arisoy, P. Seyrek Ozturk, G. Karapistik, A.F. Yavuz., A.K. Erozden, E. Dalkilic, H.C. Karatas</i>	
INS alignment duration reduction using GNSS heading	211
<i>E. Nguyen, E. Ogier</i>	
High-Precision Inertial Measurement Unit with Closed-Loop Fiber Optic Gyros operated by 1550nm 3-fiber SLED Transceiver	231
<i>Y. Korkishko, M. Levickis, V. Poznanskis, A. Strizhevskiy, M. Turulins, S. Gloor, J. Rios, N. Primerov, C. Jobson, M. Duell</i>	
A novel approach to model and identify quadrature errors in MEMS gyroscopes by finite element analysis	248
<i>J. Pfeiffer, S. Bange, A. Jäckle, S. König, M. Marx, M. Maurer, S. Meier-Meybrunn and M. Ruf</i>	
Data-Driven Gyroscope Calibration	267
<i>Zeev Yampolsky and Itzik Klein</i>	
Can a perfect vibratory gyroscope provide a drift-free angle estimation?	286
<i>E. Marolleau, P. Martin, P. Rouchon and P. Ullah</i>	
Experimental Measurements on RTK-corrected embedded real-time Navigation	306
<i>P. Bendel, C. Hintz and A. Newzella</i>	

Analysis and Suppression of Charge Accumulation Effect in Micro-shell Resonator Gyroscope	318
<i>Mingze Gao, Jun Feng, Jiangkun Sun, Sheng Yu, Kai Zeng, Yongmeng Zhang, Xuezhong Wu and Dingbang Xiao</i>	
Development of a levitated linear accelerometer	331
<i>K. Pyka, R. Flores, H. Prasad, A. Romanova, I. Lykov, S. Vintskevich, D. Grigorev, T. Zhang, and R. Reimann</i>	
A Novel Temperature Compensation Method for the Current-to-Frequency Converter	348
<i>H. Chen, Z. Liao, L. Wang, Y. Wang, Z. Liang and H. Guo</i>	
High-Precision MEMS North-Finding System in the Whole Temperature Range with Honeycomb Disk Resonator Gyroscope	365
<i>Shuiyang Liang, Quanzhu Meng, Tongqiao Miao*, Qingsong Li, Jiangkun Sun, Dingbang Xiao and Xuezhong Wu</i>	