# 16th Annual International Astrophysics Conference (AIAC 2017)

Turbulence, Structures, and Particle Acceleration Throughout the Heliosphere and Beyond

Journal of Physics: Conference Series Volume 900

Sante Fe, New Mexico, USA 6 – 10 March 2017

ISBN: 978-1-5108-4898-6

ISSN: 1742-6588

# Printed from e-media with permission by:

Curran Associates, Inc. 57 Morehouse Lane Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2017) by the Institute of Physics All rights reserved. The material featured in this book is subject to IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the Institute of Physics at the address below.

Institute of Physics Dirac House, Temple Back Bristol BS1 6BE UK

Phone: 44 1 17 929 7481 Fax: 44 1 17 920 0979

techtracking@iop.org

## 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

Email: curran@proceedings.com Web: www.proceedings.com

# **Table of contents**

# **Volume 900**

16th Annual International Astrophysics Conference: "Turbulence, Structures, and Particle Acceleration Throughout the Heliosphere and Beyond"

6-10 March 2017, Santa Fe, New Mexico, USA

(previous editions: AIAC 2015, AIAC 2016)

Accepted papers received: 13 September 2017

Published online: 26 September 2017

## **Preface**

011001 OPEN ACCESS

<u>16th AIAC: "Turbulence, Structures, and Particle Acceleration Throughout the Heliosphere and Beyond"</u>

G P Zank

011002 OPEN ACCESS Peer review statement

# **Papers**

012001 OPEN ACCESS

Nearly incompressible turbulence for different 2D and slab energy ratios

L Adhikari, G P Zank, P Hunana, R Bruno, D Telloni, Q Hu and D Shiota.....1

012002 OPEN ACCESS Pickup Particle Acceleration at Comets, Moons and Magnetospheres
Andrew J. Coates26
012003 OPEN ACCESS A Hilbert-Huang transform approach to space plasma turbulence at kinetic scales
G Consolini, T Alberti, E Yordanova, M F Marcucci and M Echim34
012004 OPEN ACCESS Heliosphere in a strong interstellar magnetic field
A Czechowski and J Grygorczuk43
012005 OPEN ACCESS Response times of Cassini/INCA > 5.2 keV ENAs and Voyager ions in the heliosheath over the solar cycle  K. Dialynas, S. M. Krimigis, D. G. Mitchell, R. B. Decker and E. C. Roelof57
012006 OPEN ACCESS The pump acceleration mechanism L A Fisk and G Gloeckler69
012007 OPEN ACCESS Reconnection at the Heliopause: Predictions for Voyager 2
S. A. Fuselier and I. H. Cairns77
012008

OPEN ACCESS

The Acceleration of Thermal Ions at a Strong, Quasi-Parallel Interplanetary Shock: A **Hybrid Simulation** 

Joe Giacalone.....86

012009

**OPEN ACCESS** 

A Hierarchical Relationship between the Fluence Spectra and CME Kinematics in Large Solar Energetic Particle Events: A Radio Perspective

N Gopalswamy, P Mäkelä, S Yashiro, N Thakur, S Akiyama and H Xie.....94

012010

**OPEN ACCESS** 

Recent Voyager Evidence for Rapid Transport of Flare-Generated Disturbances by Polar Coronal Hole Streams

D S Intriligator, W D Miller, J Intriligator, W Webber, W Sun, T Detman, M Dryer and C Deehr.....105

012011

**OPEN ACCESS** 

Flare magnetic reconnection fluxes as possible signatures of flare contributions to gradual SEP events

S.W. Kahler, M. Kazachenko, B.J. Lynch and B.T. Welsch.....117

012012

**OPEN ACCESS** 

Large Energetic Particle Pressures in Solar Cycles 23 and 24

D Lario, R B Decker, E C Roelof, A F Viñas, R F Wimmer-Schweingruber and L Berger.....127

012013

**OPEN ACCESS** 

Acceleration of Solar Energetic Particles at a Fast Traveling Shock in Non-uniform Coronal Conditions

J A Le Roux and A D Arthur.....135

012014

**OPEN ACCESS** 

Statistical origin and properties of kappa distributions

George Livadiotis.....146

012015 OPEN ACCESS

The Interaction of Coronal Mass Ejections with Alfvénic Turbulence

Ward Manchester IV and Bart Van Der Holst.....163

012016 OPEN ACCESS

Shock Wave Structure in the Presence of Energetic Particles

Parisa Mostafavi, Gary P. Zank and Gary M. Webb.....174

012017
OPEN ACCESS
Pressure Waves in the Heliosheath?

John D. Richardson.....188

012018 OPEN ACCESS

Observations of Low-Frequency Magnetic Waves due to Newborn Interstellar Pickup Ions Using ACE, Ulysses, and Voyager Data

Charles W. Smith, Poornima Aggarwal, Matthew R. Argall, Leonard F. Burlaga, Maciej Bzowski, Bradford E. Cannon, S. Peter Gary, Meghan K. Fisher, Jason A. Gilbert, Sophia J. Hollick, Philip A. Isenberg, Colin J. Joyce, Neil Murphy, Raquel G. Nuno, Zackary B. Pine, John D. Richardson, Nathan A. Schwadron, Ruth M. Skoug, Justyna M. Sokół, David K. Taylor and Bernard J. Vasquez.....195

012019

OPEN ACCESS

Critical Fluctuations in Beam-Plasma Systems and Solar Type III Radio Bursts

G. Thejappa and R. J. MacDowall.....206

012020

**OPEN ACCESS** 

Towards a parallel collisionless shock in LAPD

M S Weidl, P Heuer, D Schaeffer, R Dorst, D Winske, C Constantin and C Niemann.....213

012021 OPEN ACCESS

An Improved Parametrized Representation of the Secondary He Neutral Flow in its Source Region

Brian E. Wood.....220

012022 OPEN ACCESS

Turbulent Equilibria for Charged Particles in Space

Peter H. Yoon....226

012023

**OPEN ACCESS** 

<u>The Theory of Nearly Incompressible Magnetohydrodynamic Turbulence: Homogeneous Description</u>

G P Zank, L Adhikari, P Hunana, D Shiota, R Bruno, D Telloni and K. Avinash.....238

012024

**OPEN ACCESS** 

<u>Automated Detection of Small-scale Magnetic Flux Ropes and Their Association with Shocks</u>

Jinlei Zheng, Qiang Hu, Yu Chen and Jakobus le Roux.....256