# 12th Heavy Ion Accelerator Technology Conference

(HIAT 2012)

Chicago, Illinois, USA 18 - 21 June 2012

ISBN: 978-1-63266-475-4

### 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.

#### License

This work is licensed under a Creative Commons Attribution 3.0 Unported license: http://creativecommons.org/licenses/by/3.0/

#### You are free to:

Share - Copy and redistribute the material in any medium or format.

Adapt – Remix, transform, and build upon the material for any purpose, even commercially. The licensor cannot revoke these freedoms as long as you follow the license terms.

#### **Under the following terms:**

Attribution – You must give appropriate credit, provide a link to the license, and indicate if changes were made. You may do so in any reasonable manner, but not in any way that suggests the licensor endorses you or your use.

Printed by Curran Associates, Inc. (2014)

Published by:

JACoW - Joint Accelerator Conferences Website c/o Christine Petit-Jean-Genaz CERN BE CH - 1211 Geneva 23

Phone: 41 22 767 32 75

christine.petit-jean-genaz@cern.ch

# Additional copies of this publication are available from:

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

Phone: 845-758-0400 Fax: 845-758-2634

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

# **Contents**

Preface	İ
Foreword	iii
Contents	V
Committees	vii
Papers	1
MOA01 – Frontier Technologies and Future Directions in High Intensity ISOL RIB Production	1
MOB01 – The FRIB Project – Accelerator Challenges and Progress	8
MOB01 – The Project – Accelerator Challenges and Progress	20
MOB03 – Design and Status of the Super Separator Spectrometer for the GANIL SPIRAL2 Project	23
MOB04 – Argonne In-flight Radioactive Ion Separator	24
MOB05 – Rare-Isotope Beam Facilities in Asia	28
MOC01 – Progress and Plans for High Mass Beam Delivery at TRIUMF	33
MOC02 – Progress of the SPIRAL2 Project	40
MOC03 – Operational Considerations for Future Multi-user RIB Facilities	41
MOC04 – Commissioning Experience with CARIBU	45
PO02 – GANIL Operation Status and Upgrade of SPIRAL1	51
PO03 – The RIB Dynamics of the SPIRAL 2 Transfer Line	54
PO04 – The Darmstadt Multi-Frequency Digital Low Level RF System in Pulsed Application	58
PO05 – Control and Information System for BARC – TIFR Superconducting LINAC Booster	62
PO06 – Extension of Superconducting LINAC Operation to Lighter Beams	65
PO09 – Progress on the RFQ Beam Cooler Design for SPES Project	68
PO10 – Performance of ALPI New Medium Beta Resonators	73
PO12 - Damage Situation of the 12UD Pelletron Tandem Accelerator at the University of Tsukuba by the	
Great East Japan Earthquake	80
PO13 – Longitudinal Beam Motion in the KEK Digital Accelerator: Tracking Simulation and Experimental	
Results	83
PO14 – Feedback of Slow Extraction in CSRm	89
PO16 – MULTIPHYSICS AND PRESSURE CODE ANALYSIS FOR QUARTER WAVE $\beta$ =0.085 AND HALF	
WAVE $\beta$ =0.29 RESONATORS	92
PO17 – Simulation of Electron and Ion Dynamics in an EBIS	97
PO18 – Tandem EBIS	101
TUA01 – Heavy Ion Accelerator Development at IUAC Delhi	105
TUA02 – A Cost-Effective Energy Upgrade of the ALPI Linac at INFN-Legnaro	103
TUA03 – The Compact Pulsed Hadron Source Status*	112
	112
TUB01 – Development of NRA System for a 1.7MV Tandem Accelerator-Human Resource Development	445
Program for Nuclear Engineering, The University of Tokyo	115
TUB02 – New Developments at the Tandem Accelerators Laboratory at IFIN-HH	118
TUB03 – Terminal Voltage Stabilization of Pelletron Tandem Accelerator	124
TUB04 – LINAC Experience In The First Two Years of Operation @ CNAO (Centro Nazionale Adroterapia	
Oncologica)	129
TUC01 – Physical Design of the SPES Facility	136
TUC02 – KEK Digital Accelerator and Recent Beam Commissioning Result	143
TUC03 – Laser Ablation of Solids into an Electron Cyclotron Resonance Ion Sources for Accelerator Mass	
Spectroscopy	149
TUC04 – Experiences and Lessons Learned at CARIBU with an Open 252Cf Source	155
WEA01 – Advanced Accelerator Technology Aspects for Hadron Therapy	156
WEA02 – Focusing of Intense Heavy Ion Beams with Plasma Lenses	163
WEB01 – Electron Beam Ion Sources, Traps, and Strings: Versatile Devices to Meet the High Charge State	
Ion Needs of Modern Facilities	164
WEB02 – Commissioning of CARIBU EBIS Charge Breeder Sub-systems	165
WEB03 – DREEBIT EBIS/T for Applications in Accelerator Physics	170
WEB04 - Electron and Ion Beam Dynamics in the CARIBU EBIS Charge Breeder	172
WEB05 – ECRIS Latest Developments	173
	17
Contents	V

# HIAT 2012 - Chicago, IL USA

	WEC01 – Production 72 MHz $\beta$ =0.077 Superconducting Quarter-wave Cavities for ATLAS	174
	WEC02 – Status of the HIE-ISOLDE Project at CERN	175
	WEC03 – The SC CW LINAC Demonstrator – 1st Test of an SC CH-cavity with Heavy Ions	182
	WEC04 – Operation of Superconducting Linac and Commissioning of the Last Linac at IUAC Delhi	185
	WEC05 – Design Studies for a New Heavy Ion Injector Linac for FAIR	191
	THA01 – Heavy Ion Superconducting Linacs: Status and Upgrade Projects	196
	THA02 – Overview of the RISP Superconducting Linac	197
	THA03 – Status and Upgrade Project of HIRFL	198
	THB01 - New Developments in Low-Z Gas Stripper Sstem at RIKEN Radioactive Isotope Beam Factory	
	(RIBF)	199
	THB02 – New Design for the SARAF Phase II Linac	206
	THB03 – Design Sudy for Front-End System at Rare Isotope Science Project (RISP)	207
	THB04 – Development of the Intensity and Quality of the Heavy Ion Beams at GSI	211
	THB05 – The HITRAP Decelerator and Beam Instrumentation	217
Αp	ppendices	223
	List of Authors	223
	Institutes List	
	Participants List	232

Vİ Contents