

Joint



Workshop on Accelerator Science and Technology 2009

Programme

The Ultra-low Energy Storage Ring - Seminar Room Theory Group (09:30-10:45)

- **Conveners:** Holzscheiter, Michael (QUASAR Group, Heidelberg)

time	title	presenter
09:30	Re-Design of the Ultra-low Energy Storage Ring (USR)	PAPASH, Alexander
09:50	USR Beam Instrumentation	HARASIMOWICZ, Janusz
10:05	A Gas Jet-based Beam Profile Monitor for the USR	PUTIGNANO, Massimiliano
10:20	Design of the Ion Extraction System in a Reaction Microscope	PANNIELLO, Marco
10:30	Investigations into Laser Diode Self-Mixing	SWINDELLS, Nicola

RF Accelerators and Beam Halo - Seminar Room Theory Group (11:15-12:45)

- **Conveners:** Siggli-King, Michele (QUASAR Group, Cockcroft Institute)

time	title	presenter
11:15	Study of Superconducting Accelerating Structures for Linc Applications	SCHUH, Marcel
11:30	Investigations into the Surface Resistance of Superconducting Materials	JUNGINGER, Tobias
11:45	Field Interference of Magnets and its Influence on the Beam Dynamics in the Collector Ring	GORDA, Oleksii
12:00	Halo and Tail Simulation for Low Energy Electron Accelerators	FITTERER, Miriam Angela Anna
12:15	R on Beam Halo Monitoring and Simulation	ARTIKOVA, Sayyora
12:30	Beam Loss Monitoring with Optical Fibres for Particle Accelerators	INTERMITE, Angela

Visit of GSI Accelerators - Different Locations (14:00-15:30)

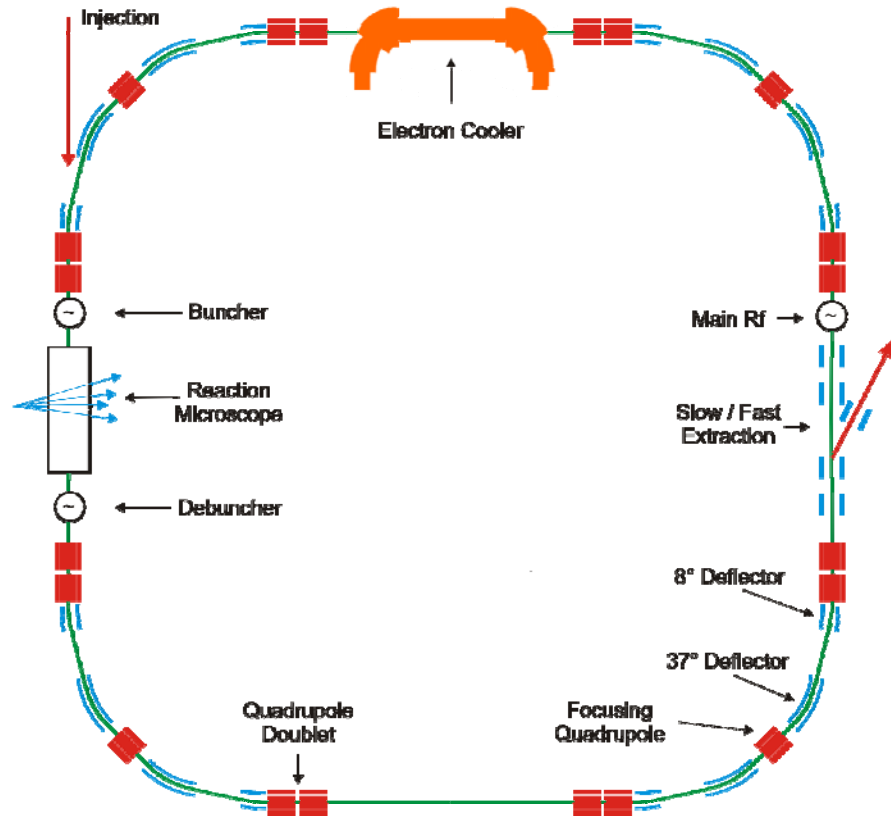
The ANKA Storage Ring - Seminar Room Theory Group (16:00-17:30)

- **Conveners:** Sonnad, Kiran (Forschungszentrum Karlsruhe and University of Karlsruhe)

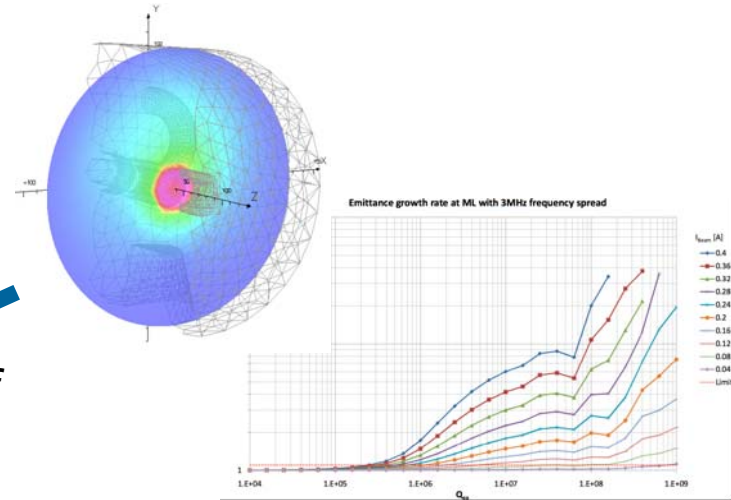
time	title	presenter
16:00	A new Electron Source for the ANKA Injector	HOFMANN, Andre
16:15	A New Toolbox for the ANKA Storage Ring	MARSCHING, Sebastian
16:30	A Hot Electron Bolometer for the ANKA Storage Ring	JUDD, Vitali
16:45	Response Matrices - Measurements and Fits	KLEIN, Marit
17:00	A Bunch Compressor for TBONE	HILLENBRAND, Steffen
17:15	Bunch Length Measurements at ANKA	HILLER, Nicole

- Tied schedule.
- Standard: 12' + 3' (Q)
- Lunch Break in cantine.
- Visit by Drs. P. Forck and T. Hoffmann

Overview of QUASAR Activities



DITANET



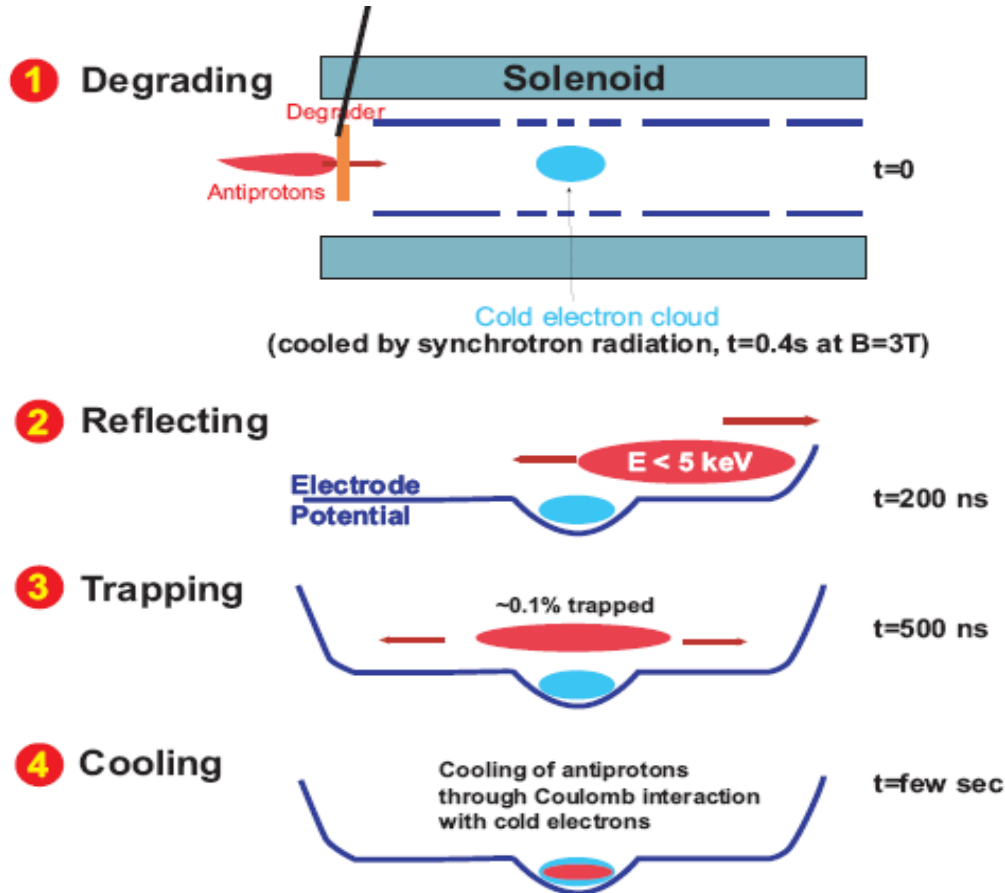
rf

pbars



- HIT Extraction
- APCT
- Detector R&D
- MC Studies
-

Problem: 5 MeV too high for trapping !



- $> 99.9\%$ of pbars lost in degrader.

~ 10.000 pbars/shot

- ASACUSA: RFQ-D

$\sim 2.000.000$

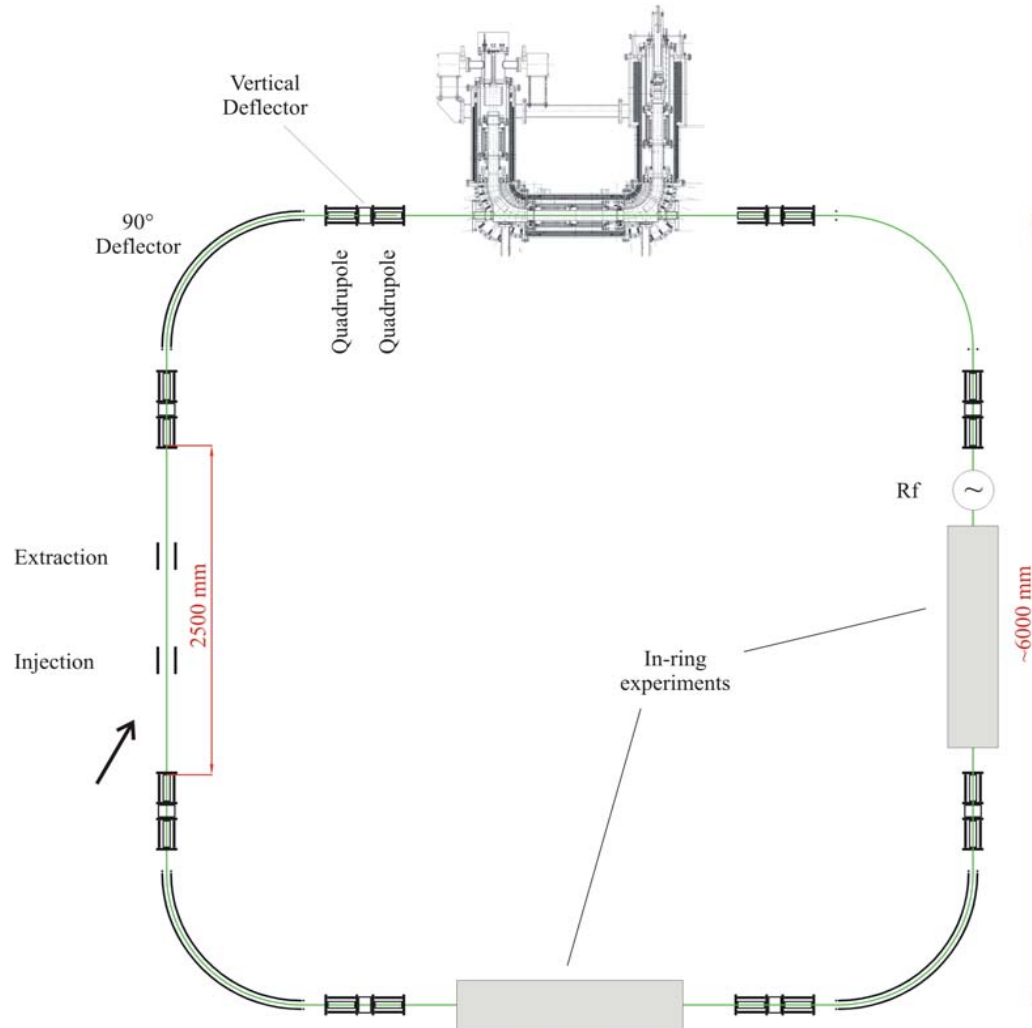
pbars/shot

BUT: $\Delta E/E$, $\epsilon_{x,y}$

FLAIR @ Facility for Antiproton and Ion Research

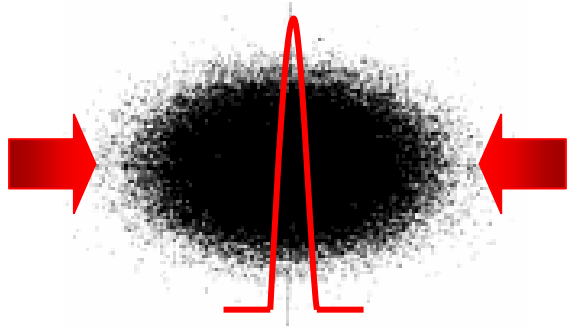


USR: First Design in 2005



Welsch, C.P., et al.
Nucl. Instrum. Methods A 546
405–417 (2005)

USR – Ring Re-Design



ns Bunching

How to realize nanosecond bunches ?

How to do beam extraction ?

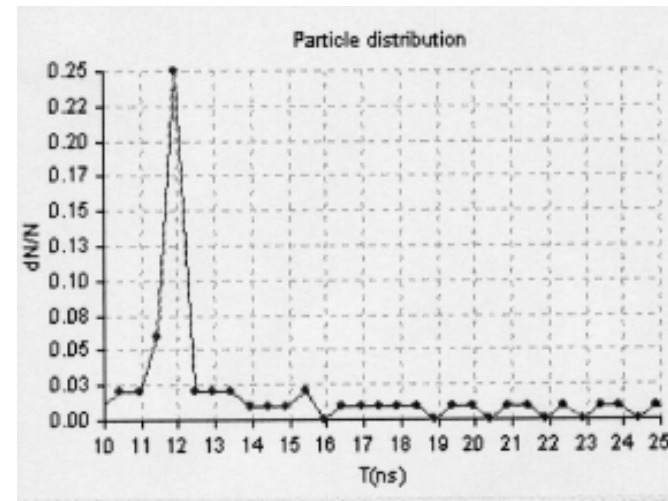
P. Schmid, M. al-Malki, G. Karamysheva



A. Papash

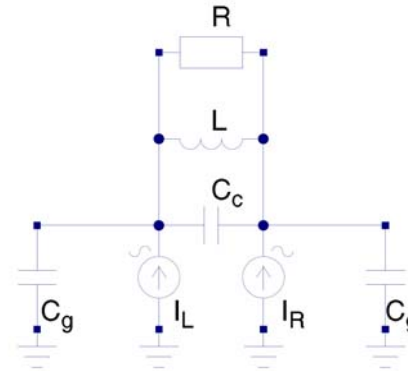
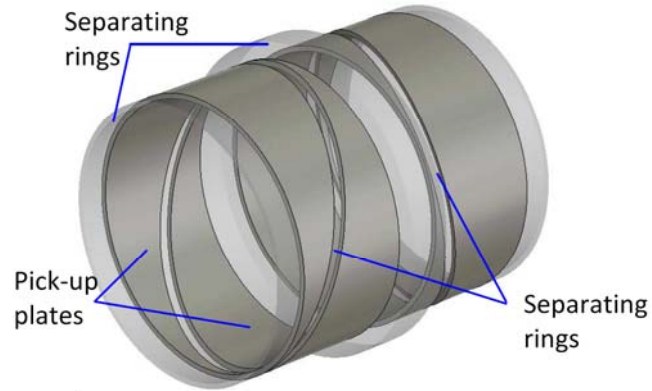
Steps:

- General feasibility
- 1-D simulation
- Full study



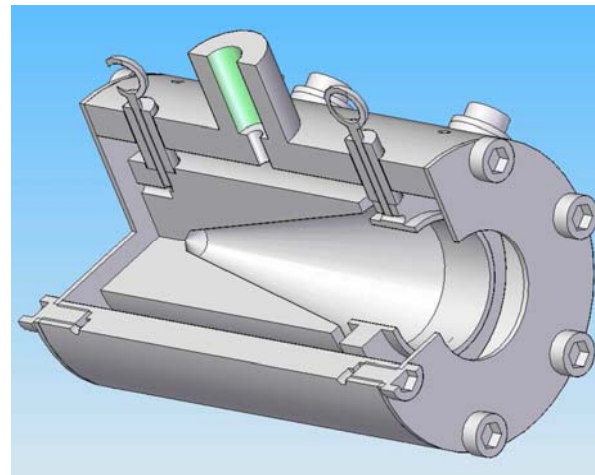
Papash, A. et al., Physics of Particles and Nuclei Letters
Vol. 6, No. 3. (2009), pp. 216-226

USR – Diagnostics

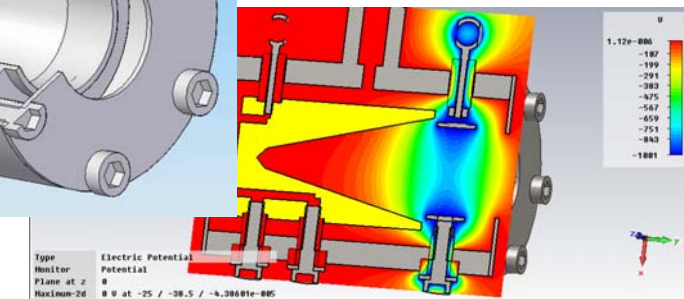


J. Harasimowicz

- Position
- Profile
- Intensity
- ...

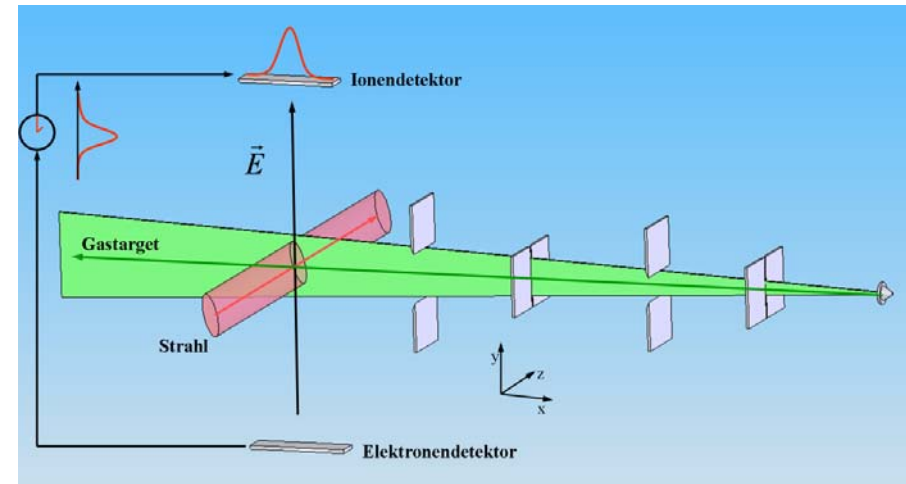
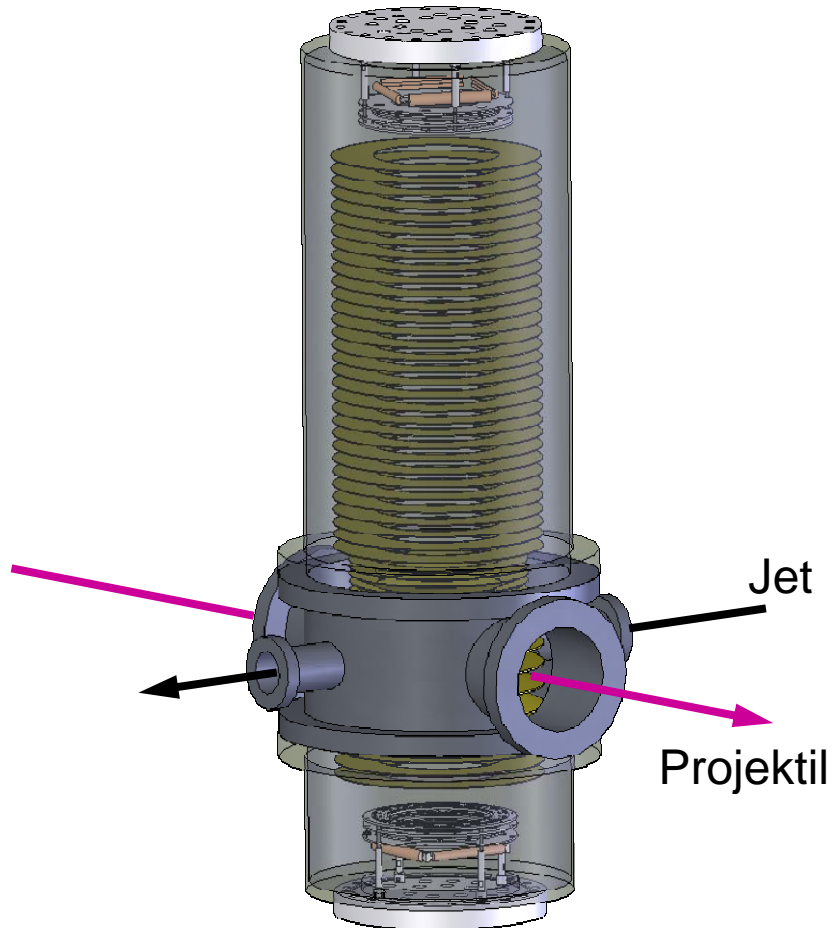


Harasimowicz, J., et al.
Hyperfine Interact. (2009).



USR – Gas Jet / ReMi

Design of the experiment.



K.U. Kühnel



M. Putignano



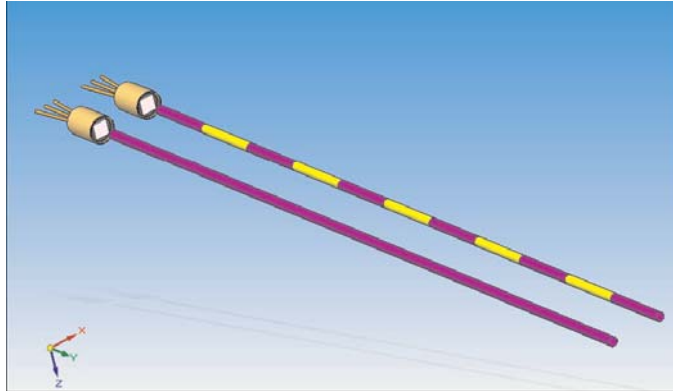
M. Siggel-King



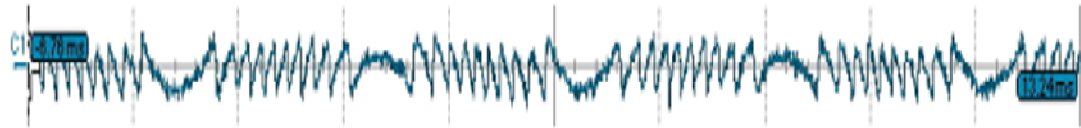
M. Paniello
(Guest)

In-ring Reaction Microscope

Jet Characterization / Beam Loss



A. Intermite et al., Proc. DIPAC (2009)



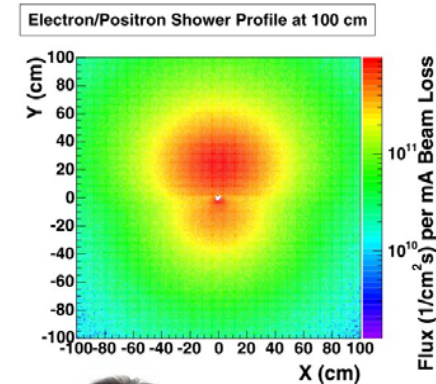
Laser self-mixing.



A. Intermite



N. Swindells
(Summer Student)



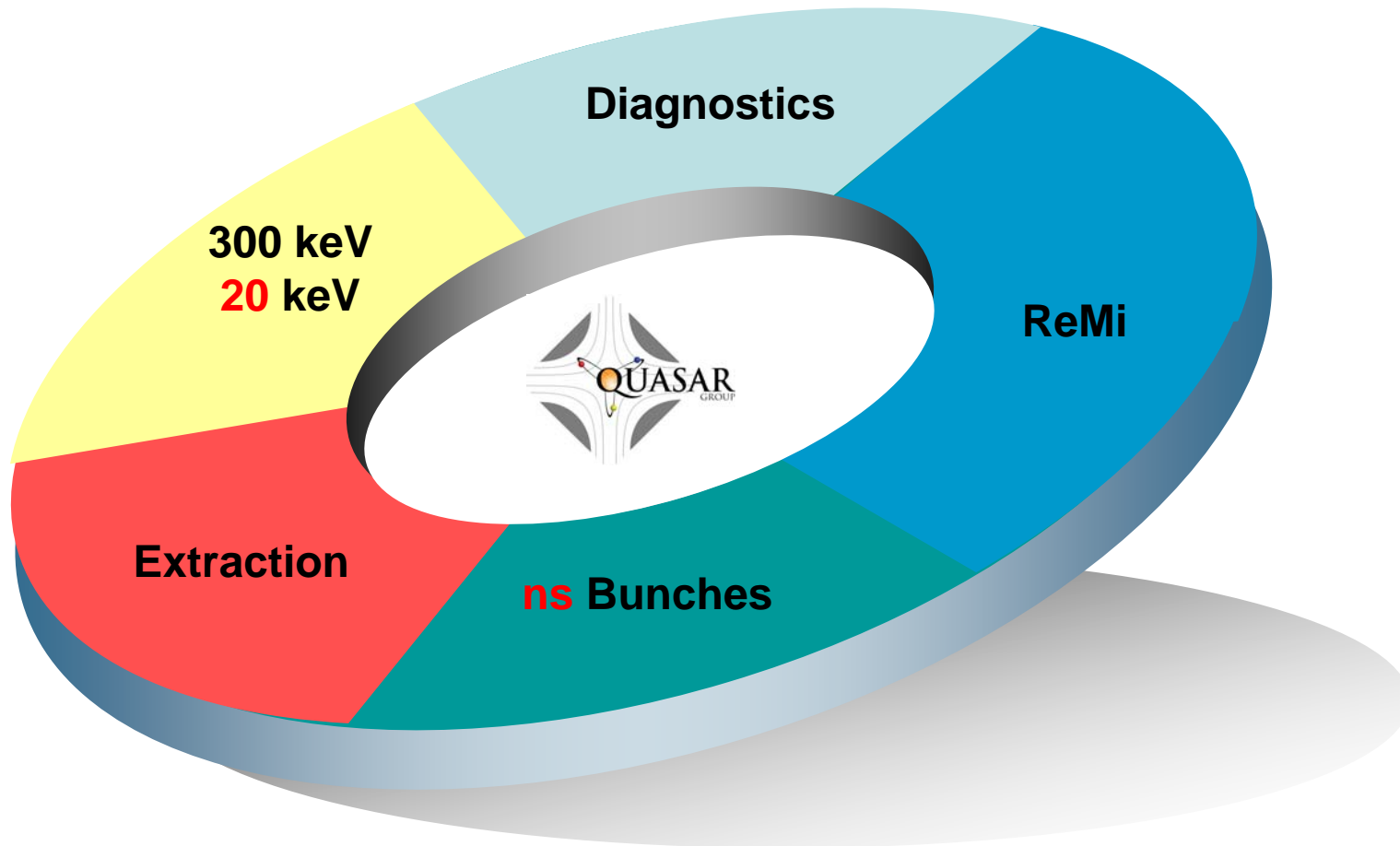
J. Egberts



S. Artikova

M. Sapinski (*BLM Scientist*)
A. Jeff (*LHC long. monitor*)

USR - Challenges



Diagnostics: International Role

DITANET

« novel **D**iagnostics **T**echniques for future particle **A**ccelerators:
A Marie Curie Initial Training **NET**work »



➔ Coordinated by QUASAR Group.
G. Wall

What is DITANET ?

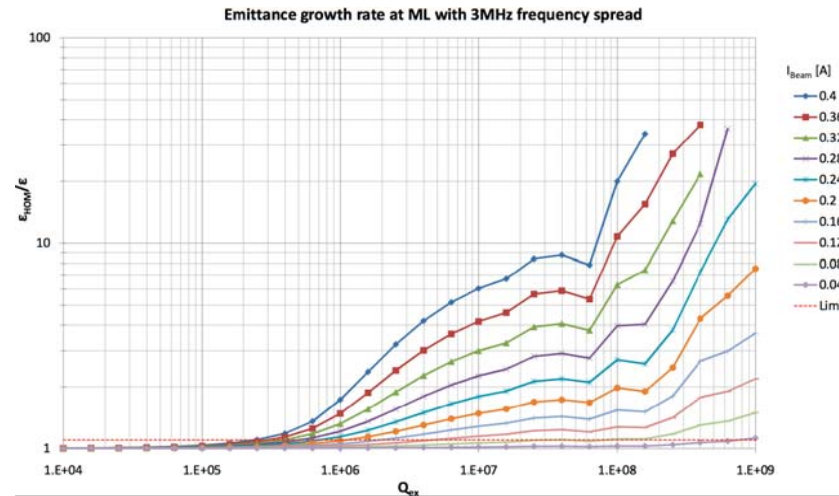
- One of the largest Marie Curie Networks ever funded by EU !
- Aim: Training of young scientists.
- Gives industry an important role.
- Allows for intersectorial collaboration.
- Recognized importance of beam diagnostics at European level !
(only 68 from 905 selected - with 11 in physics)

RF Accelerators

- HOM Studies



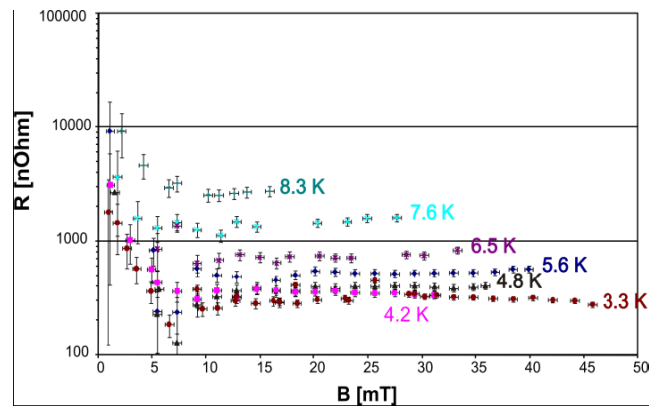
M. Schuh



- Investigations into SC Materials



T. Junginger



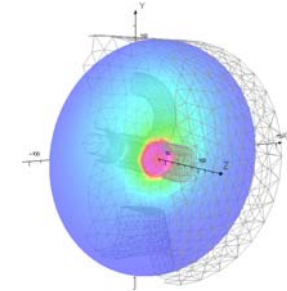
Antiproton Cancer Therapy

- Experiments at CERN's AD // Perspective FLAIR !
- 3D physical and biological dosimetry of pbars
- Real time imaging studies
- Telescopic beam steering system
- ...

Michael, Stefan, Sara,... (topic not covered today)



Overview of QUASAR Activities



- Adam - Alexander - Angela - Carsten - Glenda - Janusz - Johannes - Kai-
Uwe - Marcel - Marco - Mariusz - Massimiliano - Michael - Michele - Nicola -
Sara - Sayyora - Stefan - Tobias -