This project has received funding from the European Union's Horizon 2020 Research and Innovation programme under GA No 101004730.

IFAST Prototyping Activity **REX**

Resonant **EX**traction Improvement

2nd Collaboration Meeting, 17th of February 2022

Task leader: Peter Forck & Rahul Singh (GSI)

IFAST

I.FAST-REX Project

Goals of IFAST-REX

- Mitigate intensity fluctuations of slowly extracted beams by detailed parameter simulations, related experimental verifications, and active beam control.
- Produce a prototype of improved power supply control for current stability $\Delta I / I < 10^{-6}$.
- Produce a high-performance RF-amplifier with versatile control for knock-out extraction.
- 0.5 M€ EU contribution, total cost 1.1 M€ $\Rightarrow$ 0.6 M€ is equity ratio of participants.
- Official start: 1st of May 2021, end: 30th of April 2025, i.e. 4 years

I.FAST web-site: https://ifast-project.eu/

I.FAST-REX Project: Financials

I.FAST-REX is a workshare concerning finance: (from pre-proposal)

Financial support by EU of Beneficiaries and Associated Partners:

Beneficiaries:

			GSI	*CERN*	*HIT*	*BT*	*BI*	**Totals**
A	Personnel and travel costs	k€	310	100	100	200	200	910
B	Material and other costs	k€	70	20	20	40	40	190
C	**Requested EC contribution GSI: Incl. budget for Ass. Partners**	k€	**190**	**60**	**60**	**95**	**95**	**500**
	Funding rate F=C/(1.25*(A+B))		40%	40%	40%	31.6%	31.6%	36.4%

Associated Partners:

			MIT	*CNAO*	*MedA*	*SEEIIST*
A	Personnel and travel costs	k€	30	30	30	20
B	Material and other costs	k€	10	10	10	0
C	**Requested EC contribution including overhead costs**	k€	**20**	**20**	**20**	**10**
	Funding rate F=C/(1.25*(A+B))		40%	40%	40%	40%
	Available budget from requested EC contribution without overhead costs	k€	15	15	15	7.5

Associated Partners' budget:
Request: 70 k€
Overhead: -17.5 k€
included in GSI budget:
Ass. Part: 70 k€
GSI direct: +120 k€

Administrative documents: Grant Agreement, Consortium Agreement signed

Administrative contact at GSI: Oxana Ivanova and Sanja Damjanovic from GSI EU-Office

Goal of this Meeting

Status reports on developments:

Short contributions only due to ICFA Workshop on slow extraction 24-28 January 2022:

- **General overview:** Demands and achievement at all facilities
- **Work-package 3**: Slow extraction simulations

More detailed reports on technical developments:

- **Work-package 1:** Development and integration of high dynamic range current measurement device
- **Work-package 2:** Specification and contribution for KO signal generation, exciter and amplifier design
- **Work-package 4:** Spill detector development and analysis

Establishing of work-package collaboration and communication !

Vision: Establishing work-package activity with chairperson, participants and possibly observers

I.FAST-REX deliverables to EU:

- **Periodic progress reports** (3 to 5 pages) → probably April 2022; will mainly be written by Peter
- **Milestone April 2023** (month 24)**:** Intermediate technical report on
  'Engineering design of improved power supply current measurement and rf-amplifier layout'
- **Deliverable Feb. 2025** (month 46) : Hardware & beam-based demonstration as report on
  'Ripple mitigation for slow extraction beam quality improvement'

Aim of a Prototype Activity: Method & production of devices for accelerator improvement.

IFAST-REX Work-package Members for initial Phase

1) Development and integration of high dynamic range current measurement device:

Bergoz: Frank Stulle
CERN: Marek Gasior
CNAO: ---
GSI: Rahul Singh, Andrzej Stafiniak
HIT: --
MedAustron: Claus Schmitzer
MIT: --
SEEIIST: Elena Benedetto

Work-package 1:

- WP meetings took place
- Design work started

2) Specification and contribution for KO signal generation, exciter and amplifier design:

Barthel: Matthias Barthel
CERN: ---
CNAO: Marco Pullia, Luciano Falbo, Alessio Mereghetti
GSI: Rahul Singh, Philipp Niedermayer
HIT: Eike Feldmeier
MedAustron: Claus Schmitzer, Florian Kühteubl, Dale Prokopovich
MIT: Tobias Blumenschein, Andre Rajan
SEEIIST: Elena Benedetto

3) Slow extraction simulations:

CERN: Verena Kain, Matthew Fraser, Francesco Velotti, Pablo Arrutia
CNAO: Marco Pullia, Luciano Falbo, Alessio Mereghetti
GSI: Peter Forck, Stefan Sorge, Jiangyan Yang
HIT: Cristopher Cortes, Michael Galonska
MedAustron: Florian Kühteubl, Alexander Wastl, Dale Prokopovich
MIT: --
SEEIIST: Elena Benedetto, Rebecca Taylor

4) Spill detector development and analysis:

CERN: Federico Roncarolo, Inaki Ortega (maybe Matt Fraser)
CNAO: Marco Pullia, Luciano Falbo, Alessio Mereghetti
GSI: Peter Forck, Plamen Boutachkov
HIT: Andreas Peters, Christian Schömers
MedAustron: Dale Prokopovich
MIT: --
SEEIIST: Elena Benedetto

Task for today:

- Updated of this list
- Schedule of WP meetings

iFAST

We are looking forward to your contributions and ideas !

Thank you for your interest and participation !

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