Meeting opening:
Objectives, Milestones and Deliverables

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WP9 coordinators

WP9 objectives

- Define a strategy for innovative superconducting RF (SRF) cavities coated with a superconducting film.
  - Deposition techniques: PVD and ALD
  - Superconducting films: Nb, NbN, Nb_3Sn, V_3Si (and others) and SIS
  - Optimization of flat SRF thin films production procedure
- Optimise and industrialise the production
  - of seamless copper cavities and
  - of the deposition techniques.
- Produce and test prototypes of SRF (single-cell elliptical) cavities:
  - Initially with pre-prototypes with f = 6 and 3 GHz
  - Scaling up for f = 1.3 GHz.
- Test a new laser treatment of Nb coated cavity.

➢ **Main goal**:

- Improving the performance and reducing the cost of acceleration systems
  - both production and operation

WP9 tasks and order in the meeting Agenda

- **Task 9.1**: Coordination and strategy for innovative superconducting accelerating cavities
  - *CEA, INFN, HZB, UKRI, USI, JLab MEPHI, PTI.*
    - *Task Leaders: C. Antoine (CEA), O. Malyshev (UKRI)*
- **Task 9.2**: Innovative SC accelerating cavity prototype
  - *INFN-LNL, INFN-LASA, PICCOLI, UKRI, USI, CEA, IEE, HZB, PTI, MEPHI*
    - *Task Leader: C. Pira (INFN)*
- **Task 9.3** : Optimisation of process parameters and target development for SRF cavity coating with A15 material
  - *UKRI, INFN, IEE, USI, HZB, MEPHI, HZDR*
    - *Task Leader: R. Valizadeh (UKRI)*
- **Task 9.4**: Surface engineering by atomic layer deposition (ALD)
  - *CEA, CNRS*
    - *Task Leader: T. Proslier (CEA)*
- **Task 9.5**: Improvement of mechanical and superconducting properties of RF resonator by laser radiation
  - *RTU, UKRI, INFN, IEE, HZB*
    - *Task Leader: A. Medvids (RTU)*
- **Task 9.6**: Optimization of flat SRF thin films production procedure
  - *HZB, INFN, UKRI, USI, CEA*
    - *Task Leader: O. Kugeler (HZB)*

	IFAST WP9 Partners	Leading	Participating
1	CEA (Saclay, France)	WP, Tasks 1 and 4	Task **1**, 2, **4**, 6
3	IEE-SAS (Bratislava, Slovakia)		Tasks 2-6
4	INFN/LNL (Legnaro, Italy)	Task 2	Tasks 1, **2**, 3, 5, 6
5	*INFN/LASA (Milano, Italy)*		Tasks 2, 3
6	*Piccoli S.r.l. (Noale (VE), Italy)*		Tasks 2, 3
7	Helmholtz-Zentrum Berlin (Berlin, Germany)	Task 6	Tasks 1 and **6**
8	RTU (Riga, Latvia)	Task 5	Task **5**
9	University Siegen, (Siegen, Germany)		Tasks 2, 3, 6
10	UKRI/STFC/ASTeC (Daresbury, UK)	WP, Tasks 1 and 3	Tasks 1, 2, **3**, 5, 6
11	*Lancaster University (Lancaster, UK)*		Tasks 1 – 3, 6
12	*Jlab (Newport News, Virginia, USA)*		Tasks 1, 2
13	*PTI (Physics-Polytechnic Institute, Minsk, Belarus)*		Tasks 1, 2
14	*MEPHI (National Research Nuclear University, Moscow, Russia)*		Tasks 1 - 3
15	*Helmholtz-Zentrum Dresden-Rossendorf (Dresden, Germany)*		Tasks 1 – 3, 5

Milestones and Deliverables

Tasks	Description	Year 1												Year 2												Year 3												Year 4													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
WP9	Innovative superconducting thin film coated cavities																																																		
9,1	Coordination and Strategy for Innovative Superconducting Accelerating Cavities																											M								D																
9,2	Innovative Superconducting (SC) Accelerating Cavity Prototype												M																																		D					
9,3	Optimisation of process parameters and target development for SRF cavity coating with A15 material												M																								D															
9,4	Surface engineering by Atomic Layer Deposition (ALD)																								M																							D				
9,5	Improvement of mechanical and superconducting properties of RF resonator by laser radiation																																			M												D				
9,6	Optimization of flat SRF thin films production procedure						M																																									D				

IFAST WP9 Milestones		IFAST WP9 Deliverables	
MS37 International thin film workshop organization (web site + eport)	M28	**D9.1:** Thin-Film SRF roadmap report. *Summaries of the results obtained within the workpackage and prospective inspired from WP advances as well as discussions at TF-SRF 2022.*	M35
MS38 First seamless copper 1.3 GHz cavity produced as substrate for the coating of the SC film (Report)	M12	**D9.2:** RF test on coated resonant cavity. *Resonant cavity coated and tested with an alternative material to Niobium with a $Q_0 > 10^9$ at 4.2 K and 1.3 GHz.*	M46
M39 Coating facility built and tested at STFC, USI and INFN (Report)	M12	**D9.3:** First 6 GHz cavity coated and characterised. *Results from the morphological and SC characterisation of first coated cavity with an alternative material to Niobium.*	M36
MS40 Construction and operation of the cavity dedicated ALD system (Report)	M24	**D9.4:** Deposition of superconducting multilayers on cavities. *1.3 and 3 GHz Nb and Cu cavities coated and tested with multilayers.*	M46
MS41 A facility for laser operation for complex 3D treatment is tested on 1.3 GHz cavity (Report)	M36	**D9.5:** 1.3 GHz Nb-coated cavity irradiated by laser in Ar atmosphere and RF tested. *Increasing of the field of magnetic flux entry in Nb coated 1.3 GHz cavity irradiated by laser in argon atmosphere. Standard RF testing.*	M45
MS42 ARIES samples prepared for renewed SC film deposition (Report)	M6	**D9.6:** Test of thin-film samples. *Four thin film samples reprocessed by 4 different techniques and tested with QPR.*	M46

ARIES/IFAST meeting

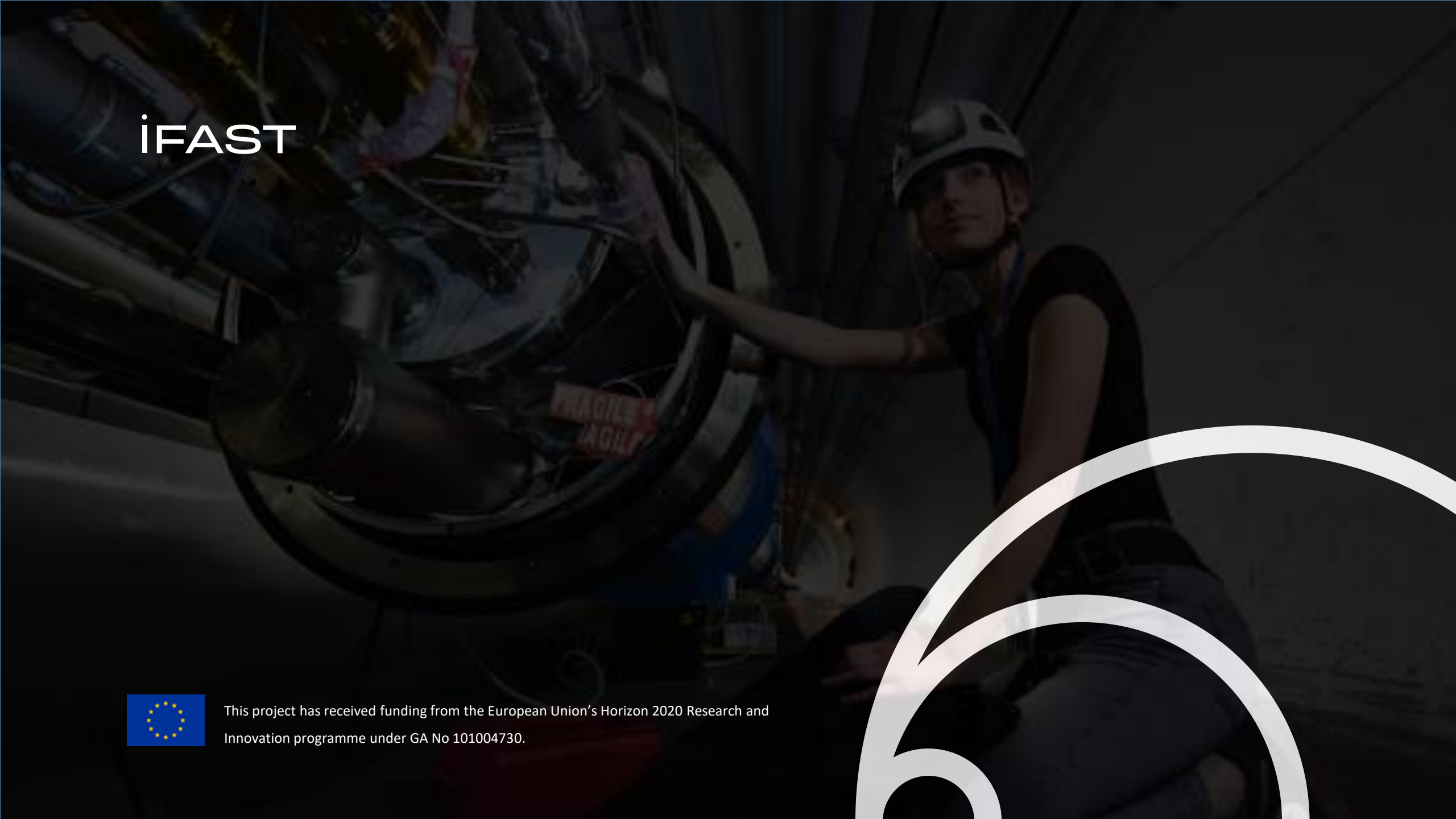
- The 1st I.FAST Annual Meeting
- Location: CERN
- Dates: 3-5 May 2022

??	**ARIES meeting**
??	**IFAST meeting**
??	**EU projects for accelerators (TBC)**
??	**WP parallel meetings**

- More news: in March after StCom meeting

MEXT WP9 meeting

- During Geneva's meeting or by zoom
- 3-5th May?



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