

EIC-related activities and perspectives in Italy

INFN physicists & EICUG

INFN community present
and truly active within the EICUG

- **INFN members in EICUG** (updated on 7 Aug 2021)
 - **101 (/ 1300)** from 15 INFN sites
 - 29 theorists, 71 experimentalists
 - Several colleagues at work since years, in particular within the program “Generic R&D for EIC”

- **INFN-EICUG members serving within EICUG:**
 - the 15 members of the [Institutional Board \(IB\)](#)
 - [IB deputy-chair](#): Andrea Bressan, elected for a second term
 - [member of the Steering Committee](#):
 - Marco Radici till end 2020
 - Silvia Dalla Torre, starting beginning 2021
 - **NEW: Marco Radici elected deputy-chair of EIC , starting now**
 - Marta Ruspa, chair of the [E&N Committee](#)
 - Michela Chiosso member of the [Conference & Talks Committee](#)

- **EICUG annual meetings:**

- EICUG2017 – Trieste, 18-22/7/2017
 - organized by INFN-Trieste and Trieste University
- EICUG2018 – Washington, 30/7-2/8 2018
 - INFN contributions: 5 talks, 1 session convener
- EICUG2019 – Paris, 22-26/7/2019
 - INFN contributions: 1 OC member, 7 talks, 1 session convener
- EICUG2020 – Miami- remote
 - INFN contributions: 1 OC member, 1 talk
- EICUG2021 – remote
 - INFN contribution: 1 OC member, 1 talk, 1 session convener



INFN physicists at work for the Yellow Report Initiative

- **Physics Group**
 - **1 sub-convener:**
 - Barbara Pasquini (Pavia, Italy)
- **Detector Group**
 - **1 convener:**
 - Silvia Dalla Torre (Trieste, Italy)
 - **2 sub-conveners:**
 - Andrea Celentano (Genova, Italy) – **electronics and DAQ**
 - Domenico Elia (Bari, Italy) – **tracking**
- **SOFTWARE Group** (support for PWG & DWG)
 - **1 convener:**
 - Andrea Bressan (Trieste, Italy)



& a number of contributors active in the different subgroups

In total:

- **57 (/414) entries in the Author Team**

INFN physicists & physics @ the EIC, more

- INFN projects for initial support for EIC-related activities
 - INFN experimentalists:
 - EIC_NET started on 1/1/2019,
 - PI: S. Dalla Torre → P. Antonioli (11/1/2021)
 - INFN theorists:
 - NINPHA dedicated to hadron physics phenomenologists, PI : M . Radici
- Establishing a tradition of national EIC-dedicated meetings
 - “Giornata Nazionale EIC_NET”



The 2021 meeting in preparation

- Contacts between INFN accelerator experts and EIC accelerator team started
 - Dedicated meeting on 7 Jan 2021

INFN physicists & physics @ the EIC

Call for Expressions of Interest for Potential Cooperation on the EIC Experimental Program (dead-line 1 Nov 2020)

INFN Expression of Interest, written by the community in close contact with INFN management

- Areas of proposed INFN contribution:
 - PID in the forward region
 - Si Vertex
 - Streaming read-out
 - Software tools
- Timescale and manpower

In the INFN EoI, appendixes also included, about:

- A short introduction to INFN
- Physics interests
- Theoretical activity

	Years	Labor, scientists	Labor, technical personnel	In-kind investment R&D	In-kind investment constructions	Travelling	Manpower	Investment, TOTAL
		(FTE)	(FTE)	(USD)	(USD)	(USD)	(USD)	(USD)
R&D phase	2021	10		minimal		minimal	0.4 M	0.4 M
	2022-2023	10		1 M		0.3 M	1.6 M	2.9 M
	2024	20						
Construction phase	2025-2029	50	10		7-8 M	0.7 M	12 M	19.7 - 20.7 M
	Investment 2021-2029, TOTAL			1 M	7-8 M	1 M	14 M	23-24 M

INFN physicists & physics @ the EIC

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	Years	Labor, scientists	Labor, technical personnel
		(FTE)	(FTE)
R&D phase	2021	10	
	2022-2023	10	
	2024	20	
Construction phase	2025-2029	50	10
	Investment 2021-2029, TOTAL		

year	researchers	FTE
2019	45	6.20
2020	46	6.80
2021	48	9.05
2022	62	15.50

INFN, formal documentation
For budget 2022 request of
EIC_NET

INFN physicists at work within ATHENA

- **Coordination Committee:**
 - 1/8 (S. Dalla Torre)
- **Working Group Conveners: 5/37**
- **Charter Committee:**
 - 1/14 (M. Ruspa)
- **Nomination and Election Committee:**
 - 1/6 (P. Antonioli)
- **EIC Silicon Consortium Coordination Board:**
 - 1/6 (G. Contin)

WGs and Conveners

Software & Computing Working Group

CONVENERS: Sylvester Joosten, Dmitry Romanov, Whitney Armstrong, **Andrea Bressan**, Wouter Deconinck

PHYSICS

▪ Inclusive Working Group

CONVENERS: Barak Schmookler, Qinghua Xu, Paul Newman

▪ Semi-Inclusive Working Group

CONVENERS: **Marco Radici**, Anselm Vossen

▪ Jets/HF/EW-BSM Working Group

CONVENERS: Ernst Sichtermann, Stephen Sekula, Brian Page, Miguel Arratia

▪ Exclusive/Tagging Working Group

CONVENERS: **Salvatore Fazio**, Spencer Klein, Daria Sokhan

5/7/2021

S. Dalla

DETECTORS

▪ Tracking Working Group

CONVENERS: Laura Gonella, **Domenico Elia**, Francesco Bossu, Matt Posik

▪ PID Working Group

CONVENERS: Tom Hemmick, **Roberto Preghenella**, Franck Guerts

▪ Calorimetry Working Group

CONVENERS: Oleg Tsai, Paul Reimer, Vladimir Berdnikov

▪ Far Forward Working Group

CONVENERS: Alexander Jentsch, John Arrington

▪ Far-Backward Working Group

CONVENERS: Krzysztof Piotrkowski, Jaroslaw Adam

▪ Polarimetry Working Group

CONVENERS: Ciprian Gal, Oleg Eyser

▪ DAQ Working Group

CONVENERS: Alexandre Camsonne, Jeffery Landgraf

EIC_Net intense EIC-related activity

Networking activity

- within EICUG and YR
- Contribution to the EIC CDR
- INFN EoI
- Giornata Nazionale EIC_NET (annual Italian EIC meeting)
- Contributions to documents submitted to Snowmass 2020-2021
- Within the ATHENA collaboration
- Attending Conferences and other scientific meetings

Physics, software and simulation activities

- Spectroscopy programme at EIC (GE, Roma2)
- Partonic imaging in coordinate space (CS), **NEW!**
- EIC software coordination and development (BA, TS)
- Use of DJANGO to simulate radiative correction effects at the EIC (TS)
- Detector simulation (BA, BO, Roma1, TO, TS)

Detector R&D

- Streamer read-out development (GE, Roma2)
- RICH activities
 - Dual RICH activities including SiPMs as photon sensors (BO, CT, FE, LNF, LNS, Roma1, TO, TS)
 - High pressure Argon as gaseous radiator for a high-momentum RICH (LNS, TS)
 - Aerogel studies (BA, Roma1)
 - Development of gaseous single photon detectors for Cherenkov application (BA, TS)
 - Characterization of the LAPPD approach to single photon detection (GE, TS) , **NEW!**
- Development of thin silicon pixel detector for vertexing (BA, TS)

FURTHER FINANCIAL SUPPORT, 2021 picture

From	source	project	groups	amount	period	usage
From ITALY	MAECI	Un sistema di acquisizione triggerless per l'EIC	GE	59.5 keuro	2021	manpower
From USA	generic R&D for EIC	eRD1 (calorimetry)	GE, RM2	20 k\$	2021	consumables
	generic R&D for EIC	eRD14 (PID)	FE, RM1	76 k\$	2021	consumables
	generic R&D for EIC	eRD6 (PID)	TS	22 k\$	2021	manpower
From EC	STRONG 2020		FE	30 keuro	2019-2022	manpower
	STRONG 2020		BA	26.5 keuro	2019-2022	manpower
	STRONG 2020		LNF	17 keuro	2019-2022	manpower
	STRONG 2020		TS	54.5 keuro	2019-2022	manpower
	AIDAinnova		TS	60 keuro	2021-2024	manpower
	AIDAinnova		BA	25 keuro	2021-2024	manpower
	AIDAinnova		BO	25 keuro	2021-2024	manpower