



SPECIAL CoEs
SESSION

Room 9

From petascale to exascale and beyond: The Centres of Excellence challenge



20 January 2025



Barcelona, Spain



10:00-17:30 CET

SPEAKERS



Marta García
(BSC)



Pratibha
Raghupati Hegde
(KTH)



Jenni Kontkanen
(CSC)



Lara Peeters
(Gent University)



Maitane Fariñas
(BSC)



Alejandra Guerrero
(GEO3BCN-CSIC)



Susanne Malheiros
(HLRS)



Alexandra Kourfali
(EuroHPC JU)



Aline Melinette
(BSC)



Laura Bellentani
(CINECA)



Thaleia Doudali
(IMDEA Software)



Madeleine Gray
(HiPEAC)



Rosa María Badia
(BSC)



Alan O'Cais
(UB)



Arnau Folch
(GEO3BCN-CSIC)



Mario Acosta
(BSC)

From petascale to exascale and beyond: The Centres of Excellence challenge

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10:00-10:05	Introduction	
Session 1: Projects		
10:05-10:20	POP3: Lessons learned and challenges discovered from assessing European HPC codes	Marta García (BSC)
10:20-10:35	Plasma-PEPSC: Pushing the frontiers of plasma simulations in the exascale era	Pratibha Raghupati Hegde (KTH)
10:35-10:50	Building Digital Twins of Earth on EuroHPC supercomputers	Jenni Kontkanen (CSC)
10:50-11:00	Q&A	
11:00-11:30	<i>Coffee break</i>	
Session 2: Transversal research in CoEs		
11:30-11:50	Streaming scientific applications	Lara Peeters (Gent University)
11:50-12:10	Mixed precision in Earth-System Models	Maitane Fariñas (BSC)
12:10-12:30	Ash fallout assessment in the HPC era	Alejandra Guerrero (GEO3BCN-CSIC)
12:30-12:50	Scientific Visualization for Exascale Simulations	Susanne Malheiros (HLRS)
12:50-13:00	<i>Q&A and Discussion</i>	
13:00-14:00	<i>Buffet lunch</i>	
Session 3: Dissemination and collaboration between CoEs		
14:00-14:20	TBC	Alexandra Kourfali
14:20-14:40	How CASTIEL 2 Enhances Access to HPC Training Across Europe	Aline Melinette (BSC)
14:40-15:00	Epicure driving high-level HPC application support across Europe	Laura Bellentani (CINECA)
15:00-15:20	How HPC Spectra benefits in the supercomputing world	Alexandra Lopez (BSC)
15:20-15:30	<i>Q&A and Discussion</i>	
15:30-16:00	<i>Coffee break</i>	
16:00-17:30	Round table Women, HPC and CoEs: HPC challenges for the future	Thaleia Doudali, Madeleine Gray, Rosa María Badia, Alan O'Cais, Arnau Folch, Mario Acosta



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Tackling software exascale challenges: the Centres of Excellence in High Performance Computing perspective



22 January 2025



Barcelona, Spain



10:00-17:00 CET

SPEAKERS



Marta García
(BSC)



Pratibha
Raghupati Hegde
(KTH)



Kallia Chronaki
(FORTH)



Roberta Farris
(ICN2)



Ángela Rivera
(METEOGRID)



Yi Ju
(MPCDF)



Sophie Valcke
(CERFACS)



Anna Schwarz
(USTUTT)



Kevin Obrejan
(CEA)



Vittoria Berta
(UNITO)



Michael Wagner
(DLR)



Lara Peeters
(Gent University)

Tackling software exascale challenges: the Centres of Excellence in High Performance Computing perspective

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Session 1: Emerging Technologies in CoEs

10:00-10:20	Exploring quantum computing in CoEs	Pratibha Raghupati Hegde (KTH)
10:20-10:40	Co-design, from a buzzword to a reality, an EPI success story	Marta García (BSC)
10:40-11:00	Vectorizing particle-in-cell algorithms - experiences from BITI	Kallia Chronaki (FORTH)
11:00-11:30	<i>Coffee break</i>	

Session 2: CoEs tackling state of the art research topics

11:30-11:50	HPC for materials: achieved milestones and current frontiers	Roberta Farris (ICN2)
11:50-12:10	The HPCs vs Own Models issue! Much about nothing?	Ángela Rivera (Metagrid)
12:10-12:30	In-Situ Techniques for the Efficient Coupling of Complex Plasma Turbulence Simulations: GENE and GENE-X	Yi Ju (MPCDF)
12:30-12:50	Carbon footprint of CMIP simulations	Sophie Valcke (CERFACS)
12:50-13:00	<i>Q&A and Discussion</i>	
13:00-14:00	<i>Buffet lunch</i>	

Session 3: Applications in CoEs

14:00-14:20	GALEXI: Scale-resolving simulations of compressible turbulence on GPU-accelerated systems	Anna Schwarz (USTUT)
14:20-14:40	From Gysela to Gysela-X++: rebuilding a tokamak plasma simulation code from the ground up to prepare for the exascale	Kevin Obrejan (CEA)
14:40-15:00	gPLUTO: towards a new era of numerical simulations	Vittoria Berta (UNITO)
15:00-15:20	Preparing the CODA CFD Software for Extreme Scale	Michael Wagner (DLR)
15:20-15:30	<i>Q&A and Discussion</i>	
15:30-16:00	<i>Coffee break</i>	
16:00-17:00	<p>Demos</p> <p>SPACE: Lessons Learnt from Porting Plasma Codes on large heterogeneous systems</p> <p>MultiXScale</p>	<p>Nitin Shukla (CINECA)</p> <p>Lara Peeters (Gent University)</p>

Organized by: