

CNRS Helmholtz Dark Matter Lab (DMLab)



Thomas Schoerner (DESY) and Dirk Zerwas (DMLab)

Visit

Hugo Zusslin and Orane Belguerras (Ambassade de France, Berlin)

Jihane Maalmi and Dominique Breton (IJCLab)

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Research in Germany

Helmholtz

Three pillars for research in fundamental science in Germany

- Universities (1808 Wilhelm von Humboldt “**Einheit von Forschung und Lehre**”)
- Max Planck Institutes (Munich, Heidelberg,...) “**Individual excellence**”
- **Research centers: DESY, GSI, Karlsruher Institut fuer Technologie (KIT)**

- **1958** “Arbeitsausschuss für Verwaltungs- und Betriebsfragen der deutschen Reaktorstationen” (Comité pour des questions d’administration et de fonctionnement des réacteurs)
- 1970 “Arbeitsgemeinschaft der Großforschungseinrichtungen” (Comité des TGIR)
- 1995 “Helmholtz-Gemeinschaft Deutscher Forschungszentren” (Communauté Helmholtz des centres de recherche Allemands)
- **2001 “Helmholtz Gemeinschaft e.V.”** (Association Helmholtz Loi 1901 avec seuls membres: les centres de recherche. Introduction du POF)

CNRS/IN2P3 Collaboration with Germany

A long history with accelerators

DESY as an example:

- Positron–Electron Tandem Ring Accelerator (PETRA): e^+e^- collisions at center-of-mass energy ~ 40 GeV
- 1980s: CELLO experiment at DESY: French-German collaboration with **Michel Davier (LAL now IJCLab)**
Academy of Science France

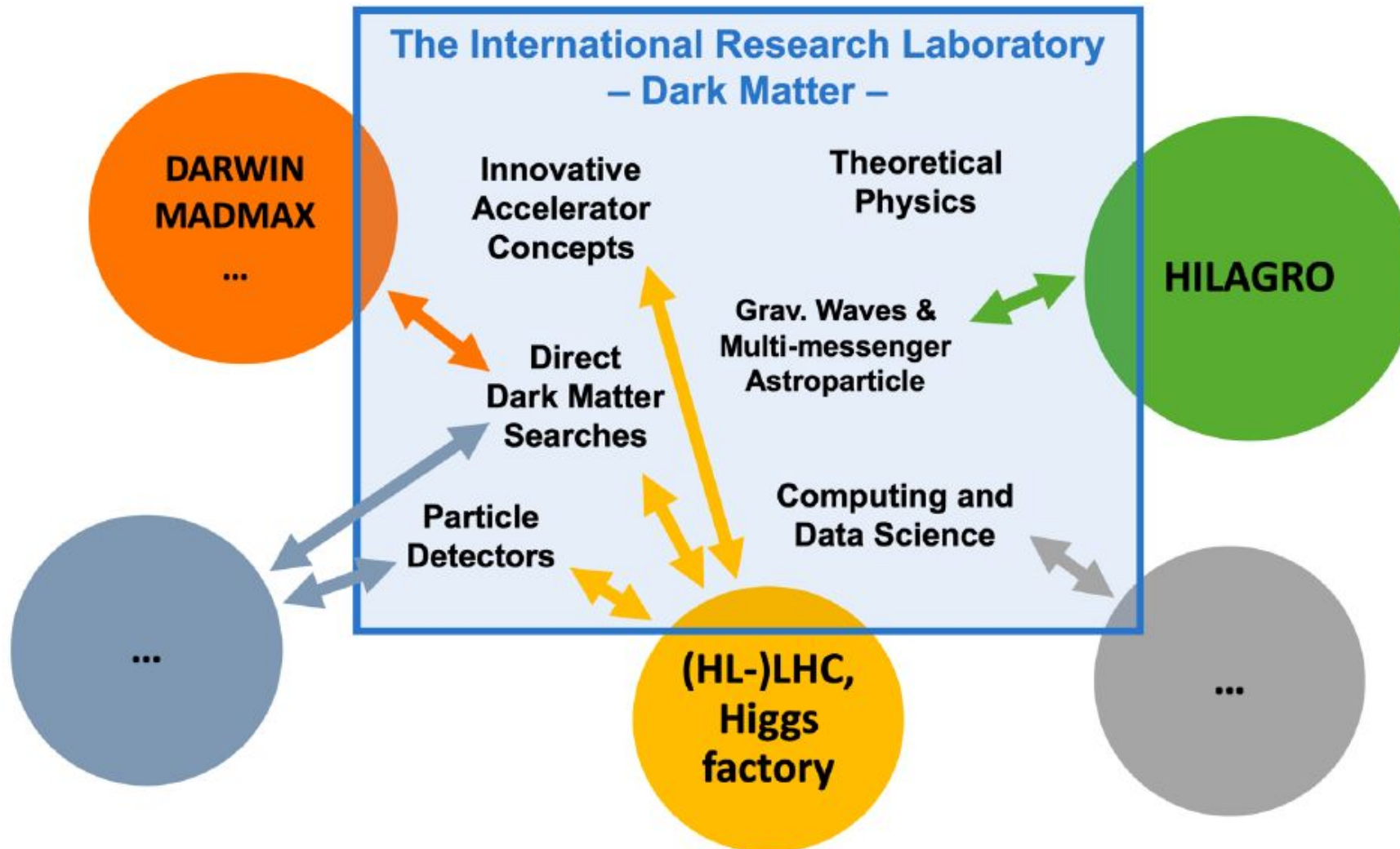
Today:

- **CALICE**
- **Plasma acceleration**
- **MADMAX and Darwin**
- **Detector development in Calorimetry and Silicon Trackers**
- **Computing and ML: algorithm development, tools for physics beyond the Standard Model of Particle physics**
- **Theory**
- **ATLAS**
- **CMS**
- **LHCb**
- **ALICE**
- **BELLE-2**
- **FAIR**
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Scientific Topics of DMLab

Organised around the central theme dark matter

Historical salespitch



IRL tasks:

- develop new ideas
- across topic boundaries
- glued by dark matter

Formally

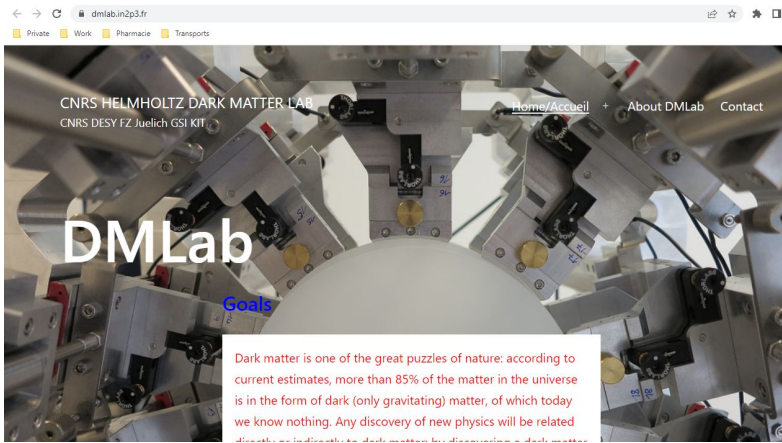
- **long term visits to DESY, KIT and GSI**
(sabbaticals/expatriation=change of lab, 1y minimum)
- **working visits** (typically 1-2 weeks)
- workshops broad and narrow
- common work
- try for common funds

Institutions

Governance

- Directorate (Director and CoDirector)
 - Dirk Zerwas (CNRS) and Thomas Schoerner (DESY)
 - Steering Committee
 - Scientific Projects Board
 - International Advisory Committee
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- Website
 - Mailing list dmlab-general:
 - contact Thomas or Dirk
 - or mail to: sympa@desy.de
 - subject: subscribe dmlab-general Firstname Name

Name	Institution	Function
Reynald Pain / Berrie Giebels	IN2P3	Director
Patrice Verdier (co-chair)	IN2P3	
Vincent Poireau	IN2P3	
Laurent Vacavant	IN2P3	
Beate Heinemann	DESY	Director of particle physics
Hans Ströher (co-chair)	FZ Jülich	Director of IKP2
Yvonne Leifels	GSI	Deputy research director
Marc Weber	KIT	Head of division V



The DMLab SPB

Projects

Projects:

- **living system:**
starting/merging/ending

2024

- workshop plasma
- working visits to:
 - KIT
 - GSI
 - DESY
- Workshop 2024@LPNHE Paris to prepare:
 - ANR-DFG projects submitted
 - **CALO5D succeeded (volume 1MEuro)**
 - Procope24+

Topic	Project	PI France	PI Germany
Direct Searches	Darwin	Julien Masbou (Subatech)	Klaus Eitel (KIT)
	MadMax	Fabrice Hubaut (CPPM)	Axel Lindner (DESY)
GW and MM Astroparticles			
Accelerators	Plasma Wakefield	Nicolas Delerue (IJCLab)	Jens Osterhoff
	Plasma Hadron	Medhi Tarisien (CENBG)	Vincent Bagnoud (GSI)
Computing and ML	Precision and ML	David Rousseau (IJCLab)	Gudrun Heinrich (KIT)
	High Precision for Dark Matter	Fawzi Boudjema (LAPTH)	Peter Marquard (DESY)
Particle Detectors	Tracking Detectors	Marc Winter (IJCLab)	Ingrid-Maria Gregor (DESY)
	Calorimeters	Roman Poeschl (IJCLab)	Katja Krueger (DESY)
	Germanium Detectors	Gilbert Duchene (IPHC)	Juergen Gerl (GSI)
Theory	Dark Matter, Gravity, Cosmology	Adam Falkowski (IJCLab)	Geraldine Servant (DESY)
	Dark Photons	Juergen Brunner (CPPM)	Peter Marquard (DESY)
	DM Gravity Cosmology	Daniele Steer (APC)	Thomas Konstandin (DESY)
	SuSpect takes a SUSY-Hit	Jean-Loic Kneur (L2C)	Margarete Muehleitner (KIT)
	Probing Strongly Interacting BSM	Giacomo Cacciapaglia (IP2I)	Christophe Grojean (DESY)
	Strangeness Nuclear Matter	Joerg Aichelin (Subatech)	Elena Bratkovskaya (GSI)