Department of Fundamental Research (DBP) in 2022

Structure

Nuclear Physics Division (BP1)
head - prof. dr. hab. Zygmunt Patyk

nuclear structure and nuclear reactions at low and intermediate energies

Theoretical Physics Division (BP2)
head - dr. hab. Michał Kowal

nuclear physics from low to high energies, physics of elementary particles, QCD, field theory, astrophysics, cosmology, classical and quantum gravity

High Energy Physics Division (BP3)
head - dr. hab. Justyna Łagoda

experimental elementary particle physics and experimental high-energy nuclear physics

Astrophysics Division (BP4)
head – prof. dr. hab. Agnieszka Pollo

oobservational cosmology and astrophysics, experimental cosmic ray physics

Employee of DBP

	DBP 2022		DBP 2021	
	people	jobs	people	jobs
prof. & dr. hab.	35 (10)	27.8	39 (15)	27.5
dr	52(3)	49.9	55	54.2
mgr	2	1.1	2	2
administration & technical stuff	8	8	8	8
all	97 (14)	86.8	104 (15)	91.7

2022	BP1		BP2		BP3		BP4	
	people	jobs	people	jobs	people	jobs	people	jobs
prof. & dr. hab.	3	3	16 (5)	12.8	10 (4)	6.8	5 (1)	4.4
dr	2	2	18(1)	17.5	17(2)	15.4	15	15
mgr	0	0	0	0	0	0	2	1.1
administration & technical stuff	2	2	0	0	0	0	3	3
all	7	7	34 (6)	30.3	27 (6)	22.2	25 (1)	23.5

39 Ph.D. students in 2022

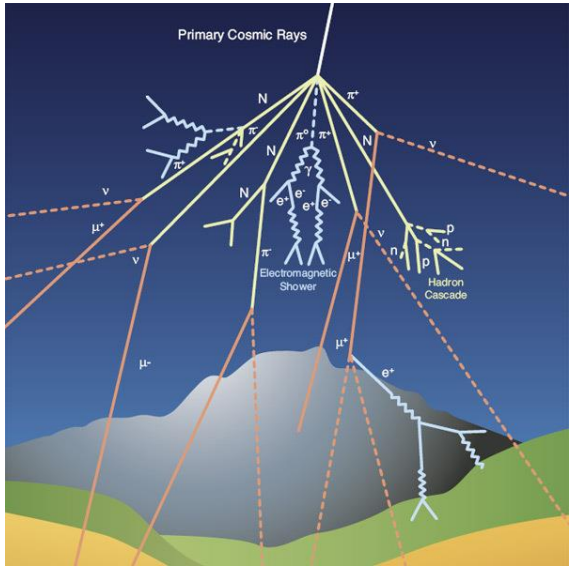
33 Ph.D. students in 2021

* in brackets number of employee receiving pension

Maria „Hula” Szeptycka passed away

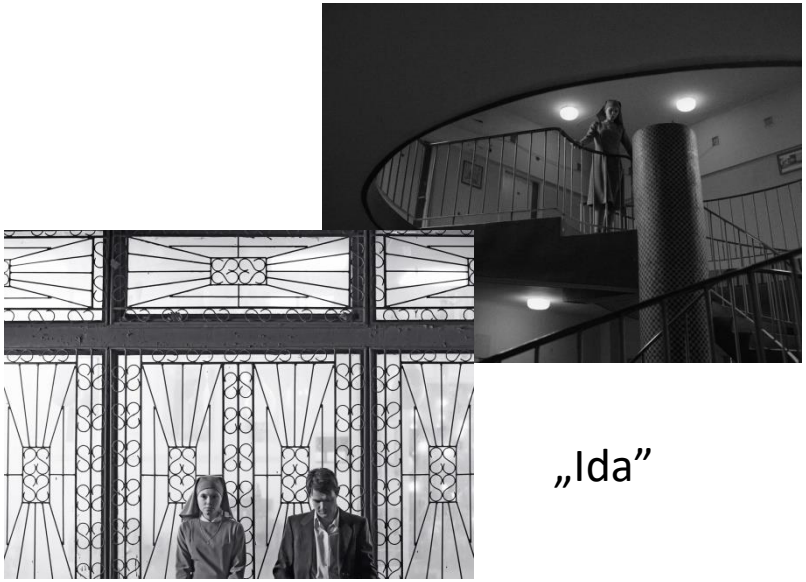
Maria „Hula” Szeptycka (1936 - 2022)

Cosmic Ray Laboratory in Łódź was closed



- Rich history spanning over half a century
- Prominent physicists

  Aleksander Zawadzki⁺, Jerzy Wdowczyk⁺,
  Jerzy Gawin⁺, Janusz Zabierowski, Tadeusz Wibig,
  Jacek Szabelski ….



„Ida”

Promotions

2022	2021
Doctorates: **4**	Doctorates: **0**
Habilitations: **1**	Habilitations: **0**
Professorship: **0**	Professorship: **1**

Doctorates: K. Jodłowski, G. Żarnecki, A. Poliszczuk, S. Nakoneczny

Habilitations: A. Ukleja

Research grants

2022		2021	
all grants:	**54**	all grants:	**59**
grants of NCN:	**36**	grants of NCN:	**32**
MNiSW :	**4**	MNiSW :	**11**
UE, NCBiR, NAWA, others:	**14**	UE, FNP, NCBiR, NAWA:	**15**

Publications

2022

Peer-reviewed publications: **412**

BP1: **14** (6 together with BP2, BP3)
BP2: **151** (74 together with BP3)
BP3: **234** (72 together with BP1, BP2 or BP4)
BP4: **89**

2021

Peer-reviewed publications: **370**

BP1: **17** (6 together with BP3)
BP2: **130** (65 together with BP3)
BP3: **207** (72 together with BP1, BP2 or BP4)
BP4: **88** (1 together with BP3)

Main fields of research

Experimental physics

- High-energy particle physics – experiments CMS & LHCb, 14*
- Neutrino physics – experiments T2K, SK, km3net, Hyper-K, 10
- High-energy nuclear physics – experiments ALICE, NA61/SHINE, 5
- High-energy lepton-hadron interactions – experiment COMPASS, 3
- Hadron physics – experiments KLOE-2, 5
- Observational cosmology – projects VIPERS, VVDS, AKARI, Planck, 8
- Observational astrophysics – LIGO-Virgo, 5
- Cosmic ray physics – experiments JEM-EUSO, 7
- Nuclear structure – experiments @ GSI and @ U200, 4
- Nuclear reactions at low and intermediate energies, 5

* approximate number of physicists involved

Main fields of research cont.

Theoretical physics

- Structure and dynamics of atomic nuclei (superheavy and exotic), 4*
- Interactions and structure of hadrons, QCD, 10
- Cosmological models, classical and quantum gravity, 8
- Physics beyond Standard Model and dark matter, 9
- String theory, 3
- Ultra-cold atomic gases, 2

* approximate number of physicists involved

Presentations of main research achievements of 2022

presentation	speaker
Low surface brightness galaxies	Junais
The ALPINE-ALMA [CII] survey	Michael Romano
Dissecting quasars	Krzysztof Hryniewicz
Galaxy evolution from redshift to based on the VIPERS data	Miguel Figueira
Discrete symmetry tests using hyperon-antihyperon pairs	Nora Salone
New results from NA61/SHINE experiment at CERN	Damian Pszczel
Newest T2K results on neutrino oscillations	Kamil Skwarczyński
Determination of branching fraction for	Marcin Berłowski
Determination of branching fraction of and search for exotic resonance in state	Dmytro Melnychuk
Compatibility of nuclear structure information extracted from heavy-ion and light-ion reactions	Nick Keeley
First direct measurement of nuclear chirality in ^{128}Cs	Ernest Grodner
Classical and quantum chaos in gravity	Włodzimierz Piechocki
Beyond relativistic Lagrangian perturbation theory: an exact-solution controlled model for structure formation	Ismael Delgado Gaspar
Neural network modelling of generalised parton distributions	Paweł Sznajder
Smallness of neutrino mass from asymptotic safety	Enrico Sessolo