



Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali di Frascati



International Day of
Women and Girls in Science

LNF-INFN, Frascati, 11 Feb 2020

A Nuclear Physicist inspired by Maria Skłodowska-Curie



Magdalena Skurzok

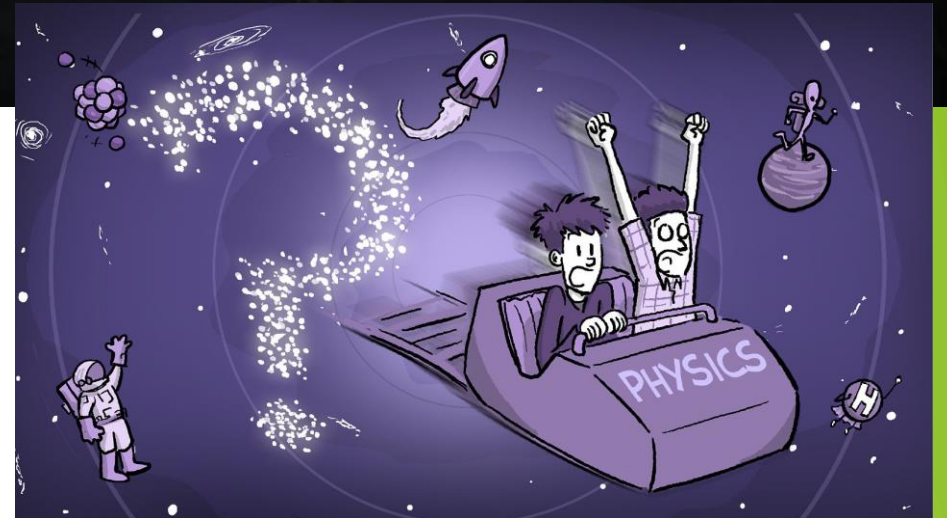
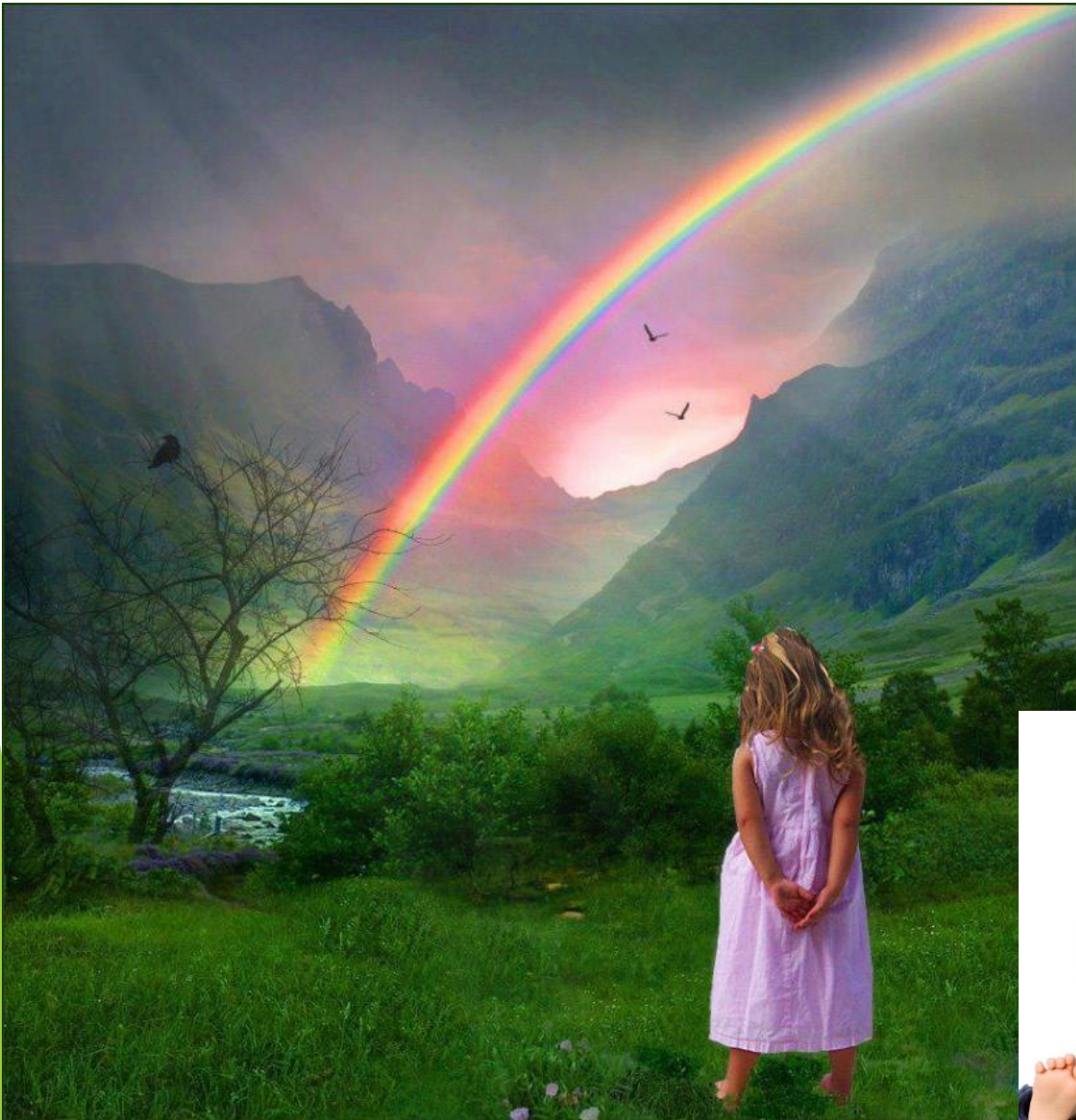
INTRODUCTION



Born in Jaworzynka in 1986



CURIOSITY



BREAK STEREOTYPES!!!

„It is rather job for men”

„You will not be good enough”

„It is too hard work for woman”

„Women are less intelligent to do the science”



Physics???



SHE BROKE GENDER STEREOTYPES

Maria Skłodowska - Curie (1867-1934)

- Polish physicist and chemists
- Conducted pioneering research on radioactivity
- The first woman to win a Nobel Prize
- The first person and the only woman to win the **Nobel Prize twice**:
 - Physics: joint researches on the radiation phenomena (1903)
 - Chemistry: discovery of Polonium and Radium (1911)

„Nothing in life is to be feared, it is only to be understood”

„I am among those who think that science has great beauty”



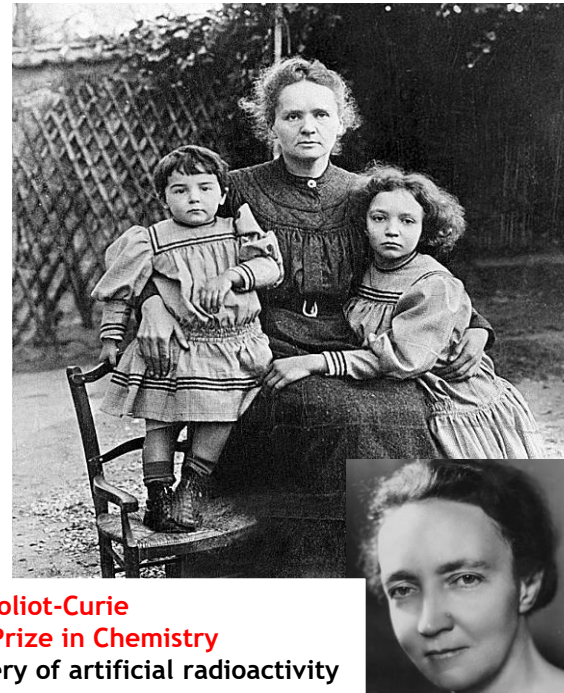
one of the first women who obtained driving license (1916)



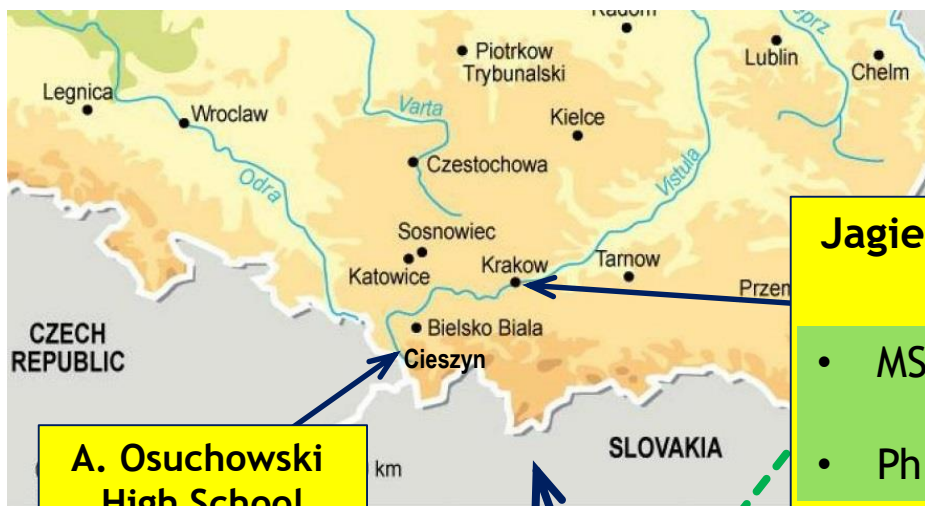
humanitarian hero



Irène Joliot-Curie
Nobel Prize in Chemistry
discovery of artificial radioactivity



MY PATH...

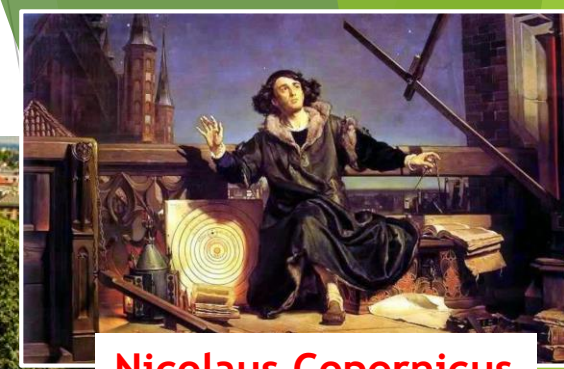


A. Osuchowski High School

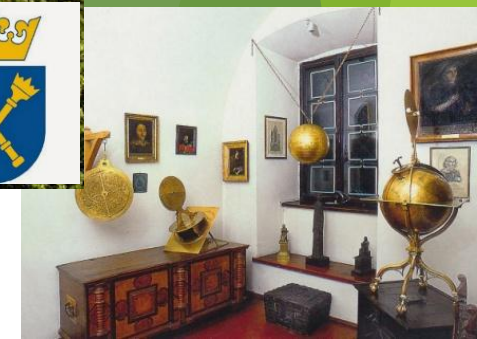
- Mat-Fiz class

Jagiellonian University in Krakow

- MSc Diploma
- Ph.D. Degree (2016)
- PostDoc (2016-2018)



Nicolaus Copernicus



Istituto Nazionale di Fisica Nucleare
Laboratori Nazionali di Frascati

LNF-INFN Frascati

- PostDoc (2018-2020)



MASTER AND PH.D. STUDIES

Kraków



Jagiellonian University in Krakow

*International PhD Studies in Applied Nuclear
Physics and Innovative Technologies*

Foundation for Polish Science

Research Grant PRELUDIUM 6

Polish National Science Center, No. 2013/11/N/ST2/04152;
Principal Investigator



2016



ACTIVITY IN FORSCHUNGSZENTRUM JÜLICH

Master Thesis:

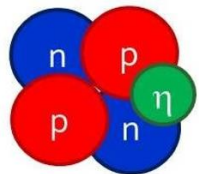
Feasibility study of η -mesic nuclei production by means of the WASA-at-COSY and COSY-TOF facilities

Ph.D. Thesis:

Search for η -mesic helium via $dd \rightarrow {}^3\text{He}\pi^0$ reaction by means of the WASA-at-COSY facility

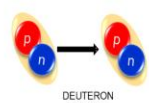
mesic nucleus

${}^4\text{He}-\eta$



STRONG INTERACTION

$$m_{\text{bound}} = m_{{}^4\text{He}} + m_{\eta} - B_s$$

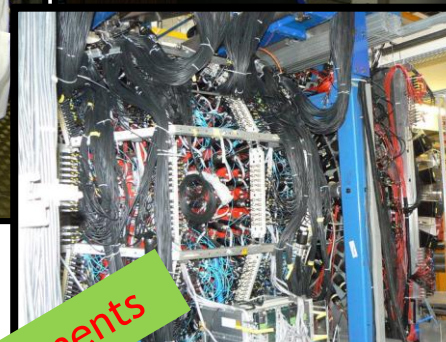
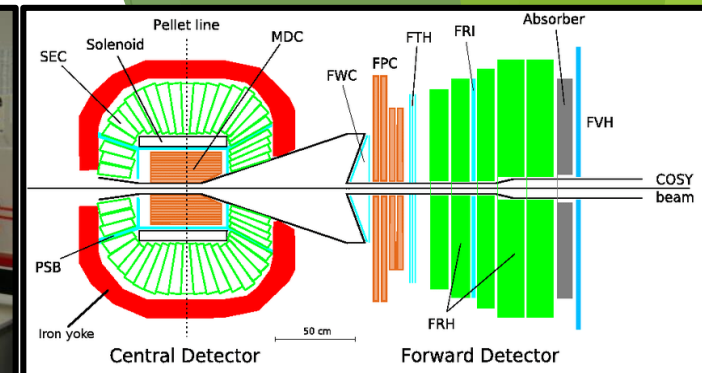
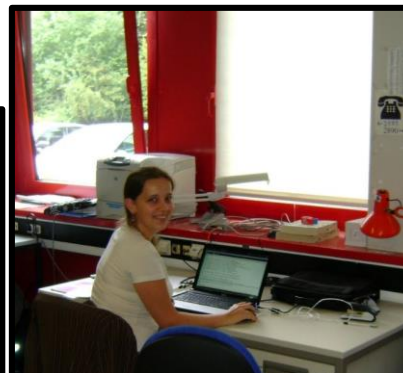
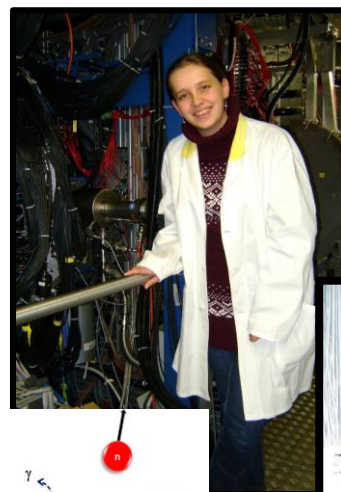


ABSORPTION OF η MESON BY ONE OF NUCLEON INSIDE THE HELIUM



NUCLEON EXCITATION INSIDE THE NUCLEUS - N^* RESONANCE FORMATION

SCHEME OF REACTION PROCESS, IN WHICH η -MESIC NUCLEUS IS FORMED



Taking part in measurements
Detectors calibration
Data analysis

In 2014 experimental run coordinator: search for ${}^3\text{He}-\eta$ mesic nuclei

COSY Proposal /Letter of Intent /Beam Request

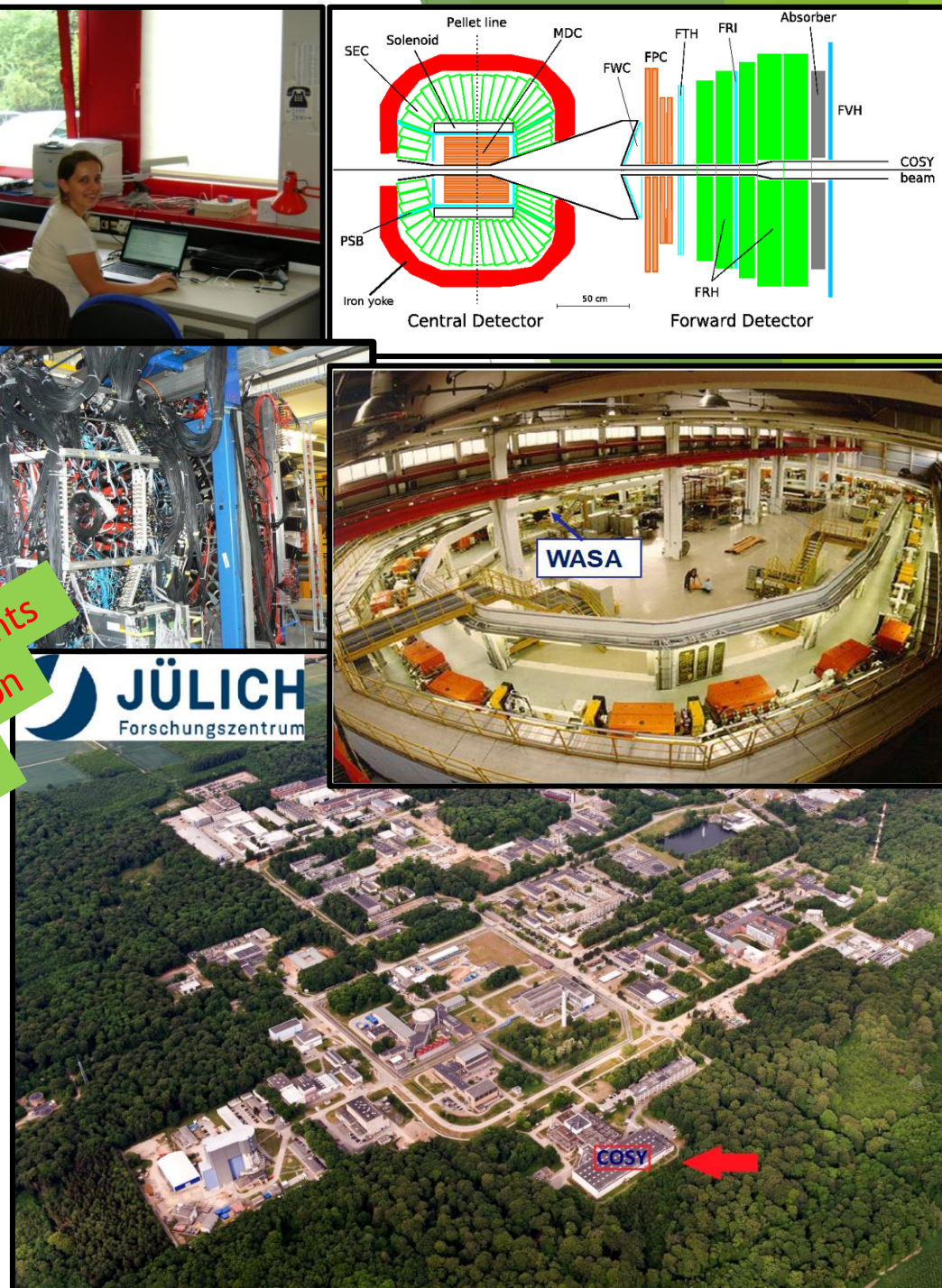
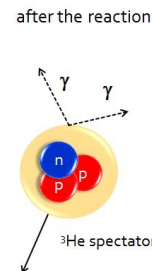
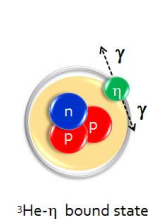
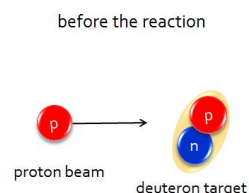
For Lab. use	
Exp. No.:	Session No.
186.3	42

Title of Experiment: Search for the η -mesic ${}^3\text{He}$ with WASA at COSY

Collaborators: The WASA-at-COSY collaboration	Institute:
_____	_____
_____	_____
_____	_____

(Continue on separate sheet if necessary)

Spokesperson for collaboration: Name: P. Moskal, W. Krzemien, M. Skurzok



HOW I GOT HERE (LNF-INFN)?

From 2013 collaboration with Prof. Catalina Curceanu Group

- AMADEUS collaboration
- SIDDHARTA-2 collaboration
- Research visits in INFN LNF

(2016-2018) PostDoc Position at Jagiellonian University

Research Grant SONATA11: Data analysis for AMADEUS

Polish National Science Center, No. 2016/21/D/ST2/01155; Principal Investigator

From 2018 PostDoc INFN Fellowship for non-italian citizens

SIDDHARTA-2 experiment



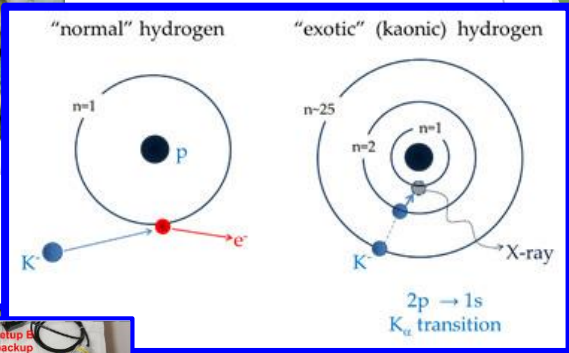
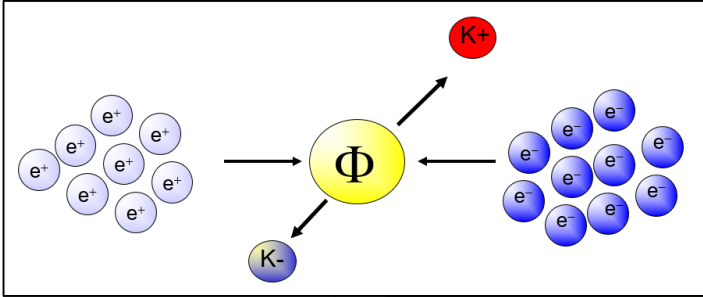
I love Italy 😊



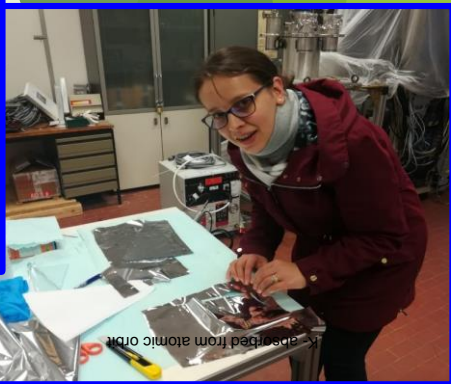
STRANGENESS STUDIES AT LNF-INFN



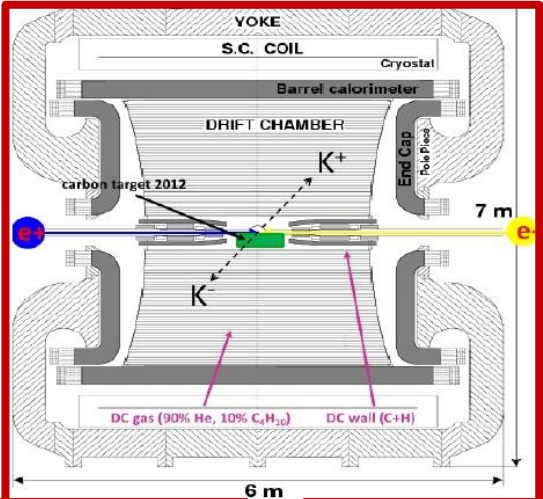
DAFNE collider



SIDDHARTA-2



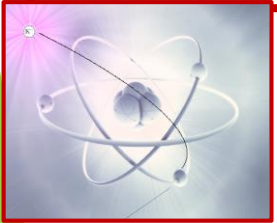
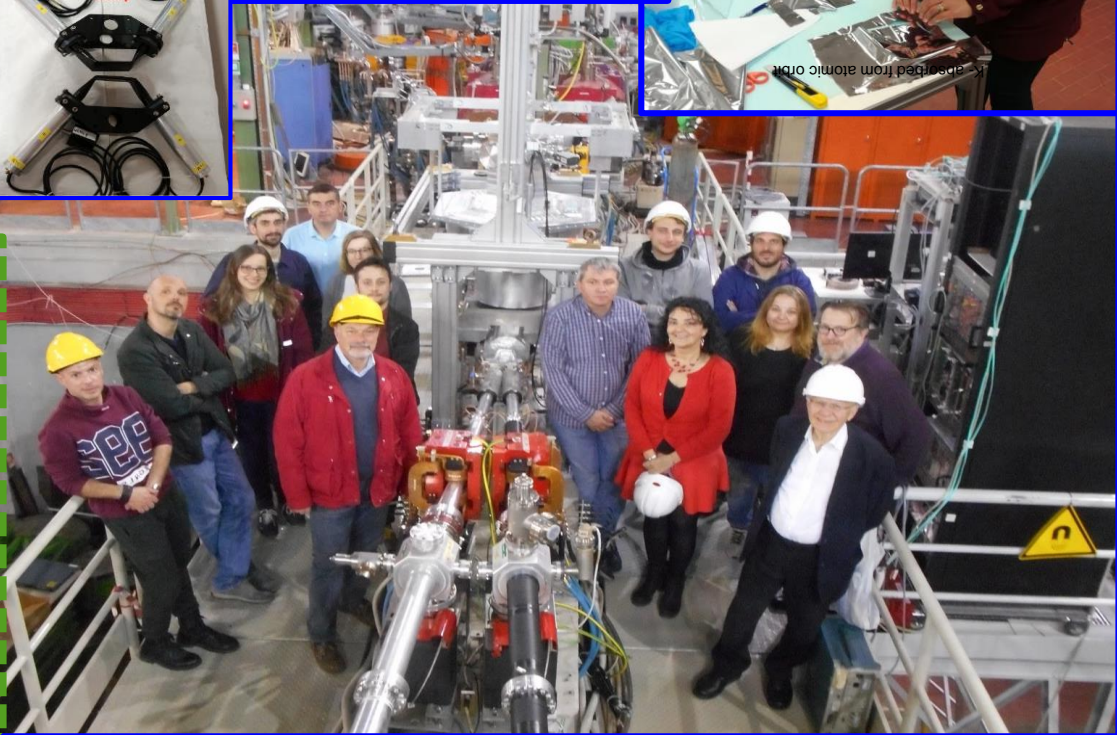
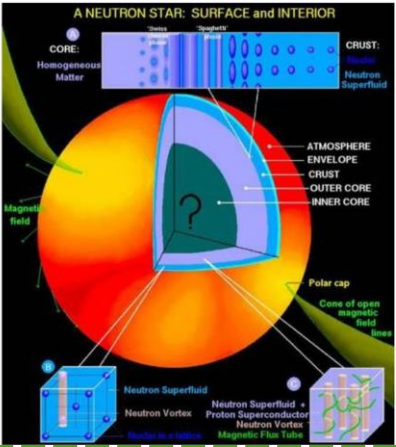
AMADEUS



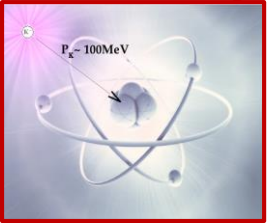
Setup preparation
Measurements
Data analysis



Could strangeness play a role in neutron stars?

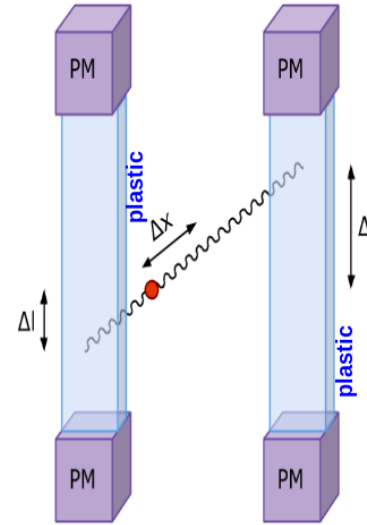
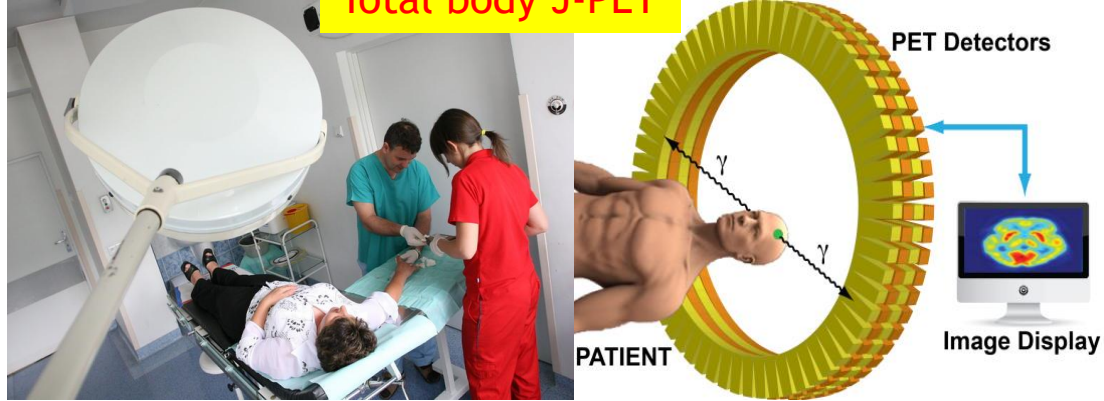


K- absorbed from atomic orbit

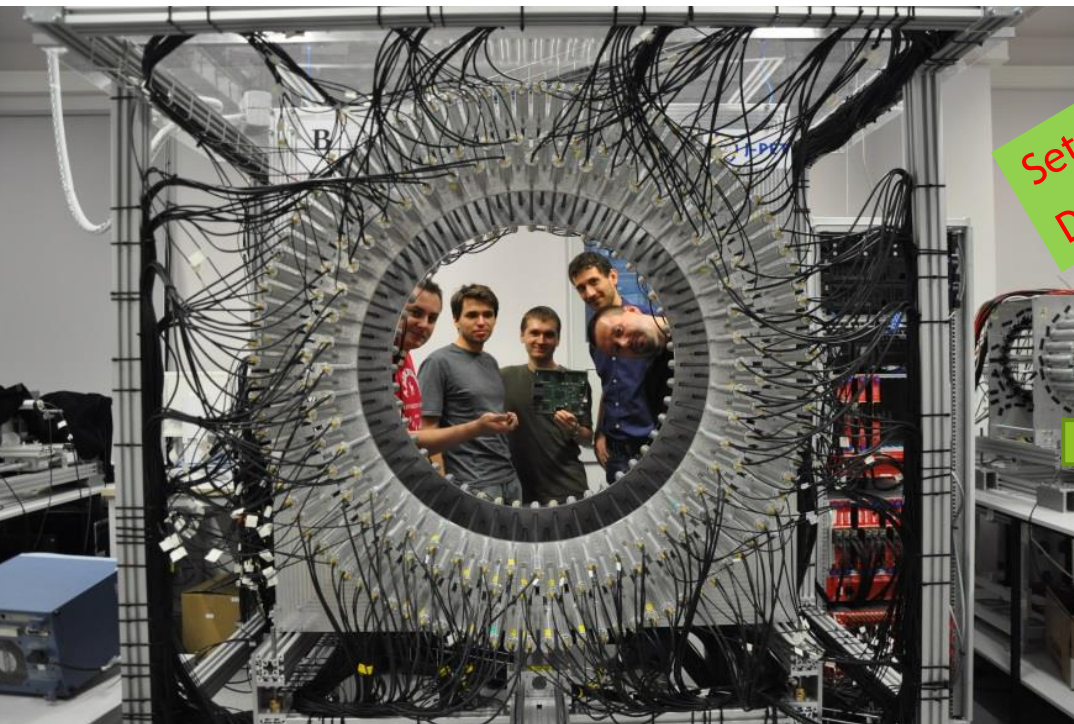


I am also involved in J-PET activities - application of nuclear physics in medicine

Total body J-PET



First J-PET prototype



Setup calibration
Data analysis

Mobile J-PET prototype



Reasearcher life...

Patience

e.x. You cannot find the error in your code...



Sacrifice

e.x. Participate skype meeting with Japanese at 6 a.m.



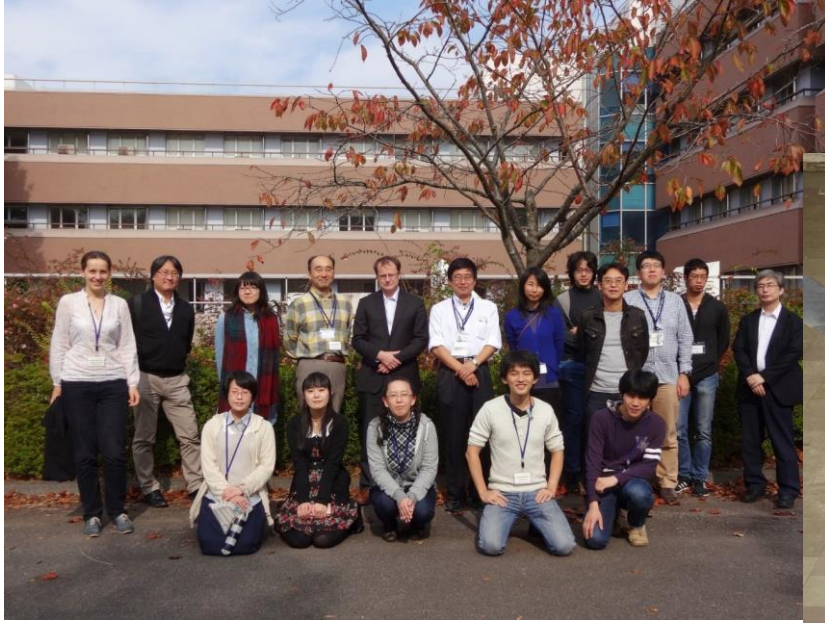
Passion



Opportunities for development



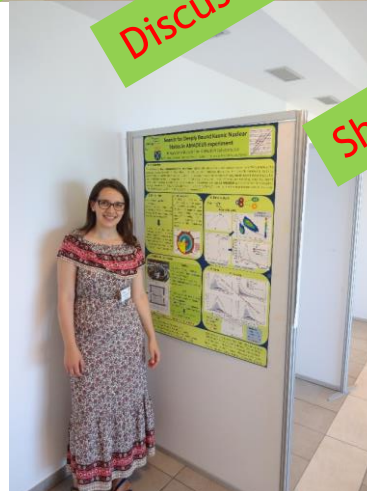
Conferences/collaboration 😊



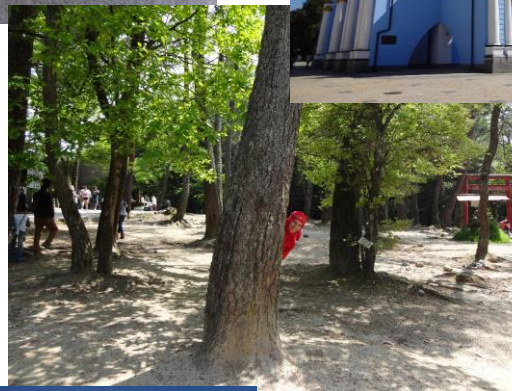
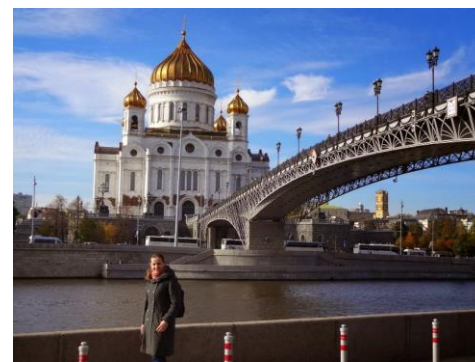
Showing results

Discussions

Sharing experiences



Travels ☺



Girls in science ☺



Beyond Physics ...

Cooking



Hot places



Mashrooming



Dance



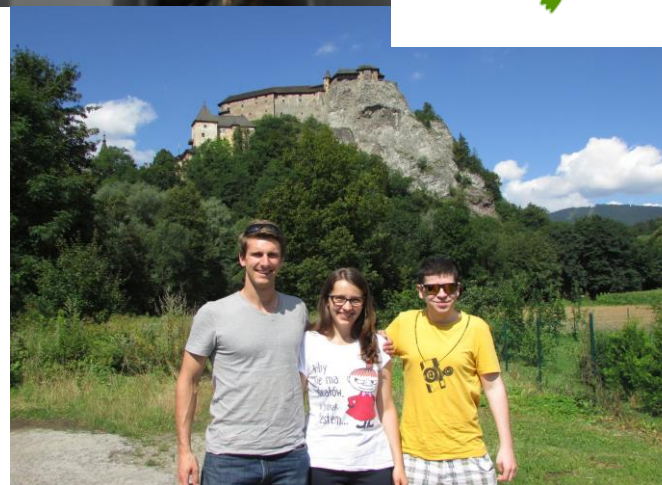
Gardening



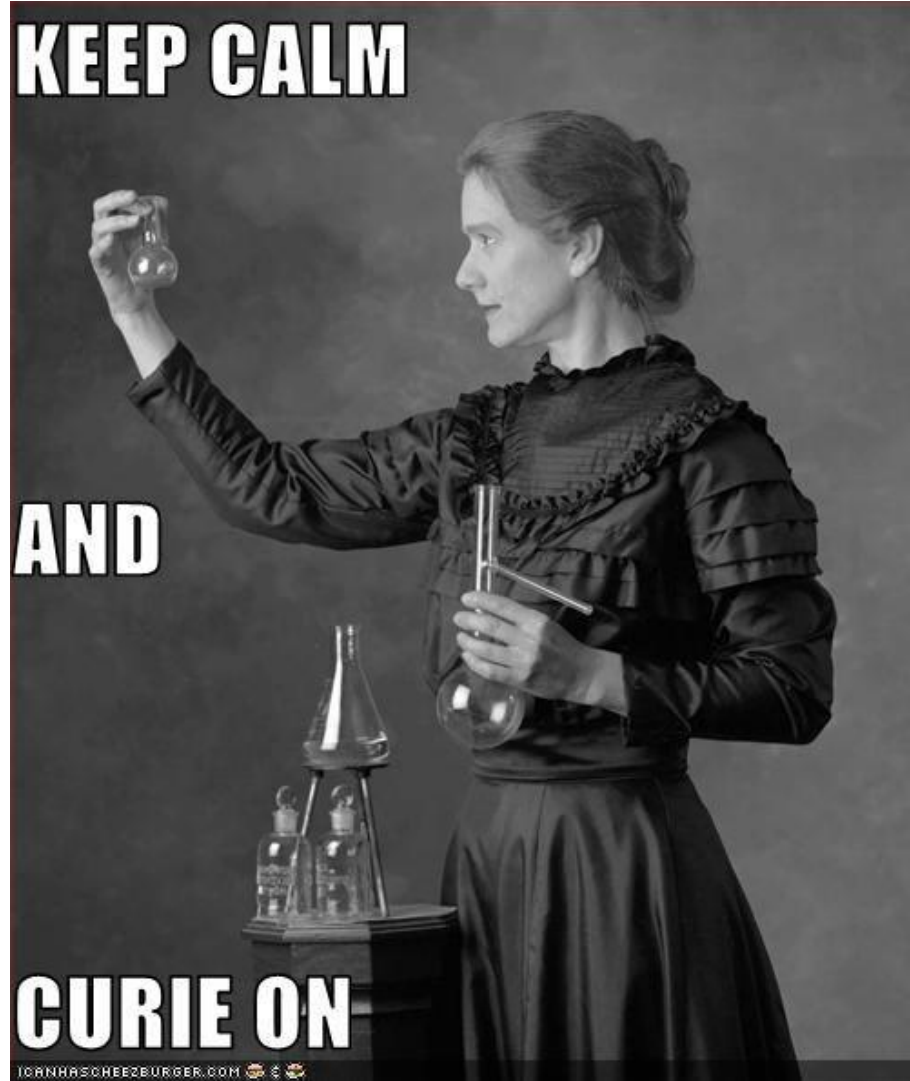
Photography



Meetings with friends



Follow your passions...



*„We must have perserverence
and above all confidence in
ourselves. We must believe
that we are gifted for
something”*

Dziękuję za uwagę 😊
Grazie per l'attenzione 😊