

Welcome and News from KSETA

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Karlsruhe School of Elementary Particle and Astroparticle Physics (KSETA)



KARLSRUHE SCHOOL ELEMENTARY PARTICLE AND ASTROPARTICLE
PHYSICS: SCIENCE AND TECHNOLOGY

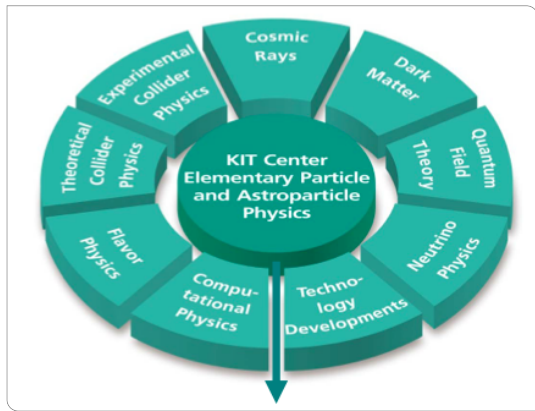
or

KARLSRUHER GRADUIERTENSCHULE FÜR ELEMENTARTEILCHEN- UND
ASTROTEILCHENPHYSIK: WISSENSCHAFT UND TECHNOLOGIE

KSETA is the doctoral school
of the KIT Center KCETA.

The **KIT Center Elementary Particle and Astroparticle Physics (KCETA)** is one of seven KIT centers, with **350** people doing research on particle physics, astroparticle physics and the development of corresponding technologies.

You are part of it!



KSETA has been inaugurated on
November 1, 2012.

- **DFG** funding **11/2012–10/2017** from German Excellence Initiative.
- Three pillars:
 - Particle Physics,
 - Astroparticle Physics,
 - Advanced Technologies.
- **43** Principal Investigators from (astro-)particle physics, electrical engineering, information technology, informatics.
- Doctoral researchers: now **112**.
- Personalized course programs, block courses.



Concept

Three categories of **KSETA** courses:

- **DEEPER:** scientific specialization in the doctoral researchers' field
- **BROADER:** wider professional education in (astro-)particle physics, engineering and computing
- **BETTER:** key competences, soft skills

Concept

Three categories of **KSETA** courses:

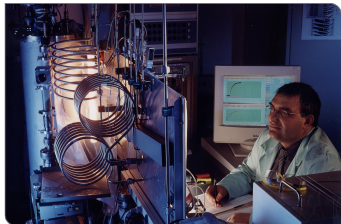
- **DEEPER**: scientific specialization in the doctoral researchers' field
- **BROADER**: wider professional education in (astro-)particle physics, engineering and computing
- **BETTER**: key competences, soft skills

Example: Electronics engineer at KATRIN:

DEEPER: Nanoelectronics,
Cryogenic detectors

BROADER: Basic quantum mechanics,
Neutrino physics

BETTER: Time management,
Project management



Regular special events:

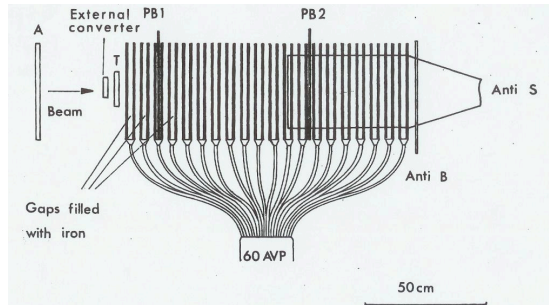
- *KSETA topical courses on Physics and Technology* (= our block courses), March and October.
- Plenary workshop (2014: Bad Herrenalb, 2015 and 2016 Durbach), in February or March.
- A workshop organized by *you*, the doctoral researchers.
- Lecture series by the recipient of the *KCETA Julius Wess Award*.

Our science: history and highlights

Herwig Schopper:

Experimental nuclear and particle physics,
head of two institutes, **IEKP** and **IKP**
1960-1973. CERN Director General **1981-1988**.

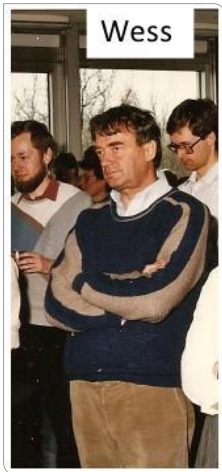
1967: invention of the **hadron calorimeter** (Schopper, Engler) to study neutron-nucleon processes in **Serpuchov/Protvino**:



Our science: history and highlights

Julius Wess:

Theoretical particle physics,
head of ITP 1968-1988.



Julius Wess and Bruno Zumino (CERN) study anomalies in quantum field theory and develop supersymmetry (→ 50000 papers worldwide).

Our science: history and highlights

- **Supersymmetry**: experiments on gauge coupling unification at **LEP**, electroweak precision calculations.
- **Superconducting cavities**.
- **Crystal Barrel Detector**, LEAR, CERN.
- Determinations of α_s and **charm** and **bottom** masses with record precisions.
- Significant contributions to the silicon detectors at **CDF** (Fermilab) and **CMS** (CERN).
- Significant contributions to the discovery of $B_s-\bar{B}_s$ mixing at **CDF**.
- Tier-1 center of the **World-Wide Grid** for **LHC** data analysis.

Our science: history and highlights

- Neutrino experiment **KARMEN** (until **2001**) at Rutherford Lab, UK, constraining for $\nu_\mu \rightarrow \nu_e$ oscillations.
- Neutrino experiment **KATRIN** (starting in **2016**) measuring the absolute **neutrino mass scale**.
- **Kascade(-Grande)** (until **2009**) studying cosmic ray spectrum in the medium-energy range (“knee”).
- Largest group in cosmic ray experiment **AUGER** in Argentina.

KSETA Doctoral Fellows

Benefits:

- training program with topical courses, special lectures, workshops, guest scientists,
- budget for conference travel and equipment,
- research environment with 112 Doctoral Fellows
 - 39% of you are financed from KSETA sources (including LGF stipends),
- possibility of a short-term postdoc grant after graduation.

KSETA Doctoral Fellows

Why should I care about **KSETA** if my funding comes from other sources?

Your supervisors flexibly use many funding sources, without **KSETA** we would have **39%** less doctoral researchers: It could have hit you...

KSETA secures and attracts other funds for doctoral researchers.



KSETA Doctoral Fellows

For your rights and duties please consult the **KSETA Welcome Guide**.

Important duties:

- attend a minimum number of **6 courses** during your 3-year PhD studies,
- write your **annual report**,
- keep your **personal web page** up-to-date,
- list your **publications** in the files `publications-reviewed.bib` and `publications-UNreviewed.bib`.
 - We have reporting duties towards our funding agencies and must list the publications.

News ticker

- Agreement on a Double Doctoral Degree in Astrophysics with UNSAM since September 1, 2015.
- First steps to define KSETA budget after October 31, 2017: review by ministry of Baden-Württemberg, financial commitment of KIT president.
- Julius Wess Award offered to Lisa Randall of Harvard University.

