



# Physics, Gender, Culture - Insights from the project "genderDynamics" for the situation in Germany

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# Participation of women in the Sciences

**Percentage of women professors 22%** (all disciplines)

→ **Vertical Segregation**, proportion of women decreasing on every career step

**Some STEM-disciplines low percentage of women at student beginner's level** (among them physics)

→ **Horizontal Segregation**, concentration of men and women in different fields of study

# Actions against segregation processes

## Women Professor Programm

→ Financially **supporting universities** for professorships for women

## Pact for Research and Innovation

→ **Quota of women** for all career levels **aimed to reach** by **non-university** research organisations

## National Pact for Women in STEM-Professions

→ Actions to **motivate young women** and girls to start a career in science and engineering

# Participation of women in physics

## Women at student beginner's level

- **Increased** from **17%** to now **30%** (last 20 years)
- Rate did **not grow continuously**

## Women among professorships

- **Continuous** increase from about **3%** to **12%** (last 20 years)

## Women among PhDs

- **Continuous** increase from about **10%** to **20%** (last 20 years)

→ **Vertical segregation seems to mitigate slowly?**

→ **Horizontal segregation still persists**

→ **Main Drop Out now during PostDoc Phase**

# Factors influencing vertical segregation

**PostDoc phase crucial career phase: high outputs rates, excellent research, temporal availability etc. required**

→ But: **Coincides** with typical **timeslot** for plans to raise a **family** and other central **life choices**

**Women's careers more vulnerable at this stage**

**Insights from Gender Studies and Sociology:**

- The **norm** of constant **temporal availability** for research is assumed to be **better fulfilled** by **men** (Dautzenberg et al. 2011; Beaufaÿs et al. 2012)
- Men **better integrated** in formal and informal professional **networks** (Dautzenberg et al. 2011)
- **Gendered workplace cultures** (Hasse/Trentemøller 2008)

# The notion of Research Cultures

## Research Cultures („Fachkulturen“):

- comprise the specific **knowledge** of the academic discipline, the **methods of research, epistemological** understanding, specific communication and **interaction styles**, patterns of **awareness** and **judging**, specific **customs** and **norms, Dos and Don'ts** (Huber 1991; Arnold/ Fischer 2004)
- The **habitus** of a community (cf. Bourdieu)
- Part of implicit knowledge, visible in day-to-day practices
  - **Students adopt** the specific habitus when **becoming** a **member** of the community

## Gendering of the habitus of physics?

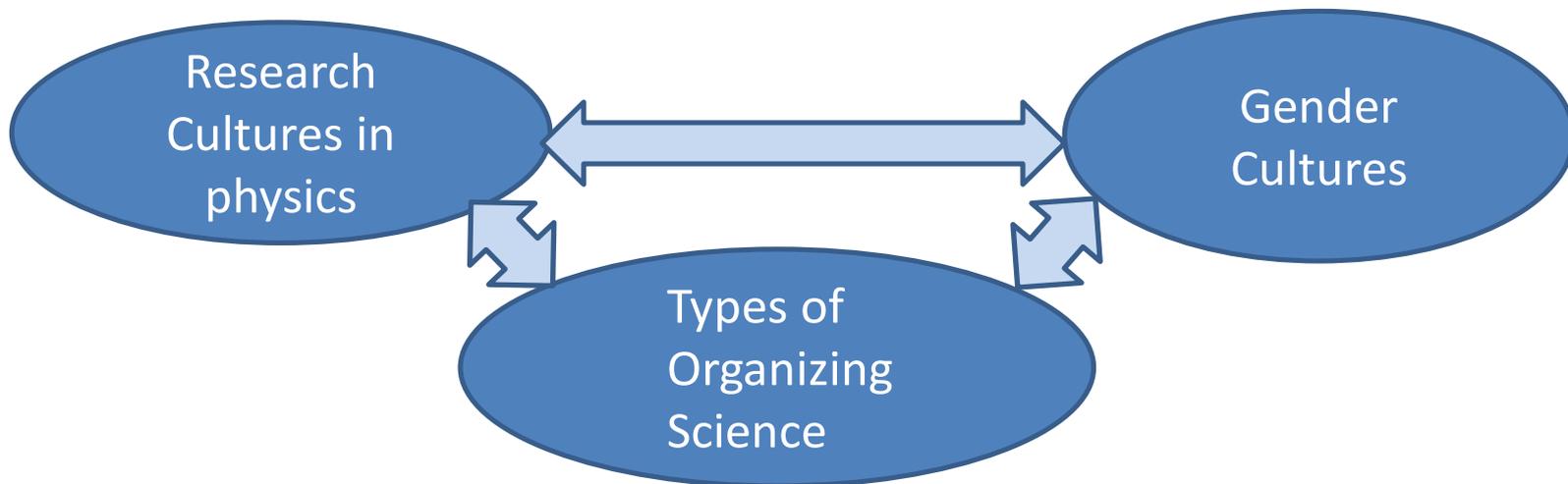
## *Doing Gender*

- Humans are doing gender in **actions, performances** and in **interactions with others**. They rather “live” a gender than having it as definite property (West/Zimmerman 1998)
- Gender is **not a fixed property** that a person has but something that is done, it is a “Doing Gender”
- Gender is **omnipresent**, but not **omnirelevant**

## *Doing Gender as Doing Science?*

# Project “*genderDynamics*”

- ❖ “*genderDynamics. Disciplinary Cultures and Research Organizations in Physics*”
- ❖ **Ethnographies: Participatory observation and qualitative interviews**



# Case Studies in *genderDynamics*

Case	Universities Research on four sites	Non-university research Research on four sites	New forms of organising research Research on two sites
1	Experimental Solid State Physics	Max-Planck-Institute, basic research, theoretical physics	Experimental chemistry, part of interdisciplinary excellence cluster
2	Experimental physics, close to chemistry	Helmholtz-Institute, Applied / experimental physics	Experimental physics, part of application-oriented excellence cluster
3	Particle Physics	Helmholtz-Institute, basic research, experimental physics	Basic research-oriented SFB
4	Experimental Physics, close to biophysics	Fraunhofer-Institute, applied physics	Application-oriented SFB

- ❖ **Gender as explicit topic in conversations**
  - **Mostly in the context of conversations on gender equality actions**
  
- ❖ **Gender in social interactions: doing science as doing gender**
  - **Observable in interactive settings, team meetings, informal chats where gender differences are made relevant**
  
- ❖ **Performing gender in research practices**
  - **Observable via metaphors members of the institute use for describing their activities**

# Snapshots of results of the gendering of physics cultures

- ❖ **Genderings** that were brought in by **team leaders** are **effectual** in the team, especially when formal **team communication** is **strongly governed**.
- ❖ **Proportion** of **women** in **applied physics** is slightly **higher** than in **other fields** of physics. There are **single groups** with a **higher** rate of women **than** in the **other** groups of the institute, regardless of the field.
- ❖ **Team leaders** of groups with a relative **high** rate of women **had striven** for getting **more women** into the group.

# Snapshots of results of the gendering of physics cultures (ct'd)

- ❖ Team leaders who **judge gender parity** as **important** for the group, mostly show **positive attitudes** also towards **gender equality actions**.
- ❖ **Reasons** for the **low rate** of women in physics are **seen in the structures of academia** and in the **research cultures of physics** and **not in the women themselves**.
- ❖ **Low percentages of women** among **student beginners** are explained as **due to imprinting processes of early childhood** and **experiences of alienation** from physics in school.



# Thank you for your attention

[www.genderdynamiken.de](http://www.genderdynamiken.de)

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