

# Physics Education Research (PER)

## Staff (2024):

- Program professor (PAP): Urban Eriksson (New)
- Faculty member: Bor Gregorcic
- Ph.D. students: 4 (present: Ebba Koerfer, Giulia Polverini)
- Postdocs: 1 (present: Christopher Robin Samuelsson)
- Teaching staff: Johan Larsson



# Research focus

We research the ways university students understand and communicate physics and astronomy and how teaching and learning can be optimized.

Main Research Areas		% of program	FTE Faculty	Type
1	The role of representations in Physics Education: -Social semiotics (SS) in university physics education.	30%	0,4	Basic
2	Understanding physical phenomena: Embodiment, reasoning and problem solving	20%	0,5	Basic
3	Students reasoning on large and small spatio-temporal scales	30%	0,6	Basic
4	AI in teaching and learning of physics and astronomy.	20%	0,5	Basic

KoF24 report, Table 3.1



# Key enablers for research

- External and internal funding critical
  - World-leading physics and astronomy education research
  - Challenges in attracting grants: university level PER not prioritized.
- Being able to attract excellent students, postdoc and researchers
- International collaborations
  - Strong collaborations with other research groups around the world, with many visitors
- Local collaborations with the divisions and programs at our department
  - Access to good teachers and students (our experimental material)



# Program priorities

(KoF24 report summary, Chapters 8-10)

## **Prio 1 (program):** Re-establishing the PER program via external money

To strengthen the research program and consolidate it via external grants

-> more permanent positions needed to maintain our world-leading position.

## **Prio 2 (department):** AI4Physics

Strengthen all physics research through increased AI literacy, method development, and applications, including educational applications (departmental priority).

## **Prio 3 (faculty):** Re-establishing the PER program

To have the program to grow to maintain and increase its internationally very high acknowledge research position by the support of the department and faculty.

