

Monday 23 July 2018, 09:00-10:00

Room: Auditoria PA 113/PA 110

Theme 2: History and epistemology in students and teachers mathematics education: Curricula, courses, textbooks, and didactical material of all kinds – their design, implementation and evaluation

Epistemological beliefs about mathematics – Challenges and chances for mathematical learning: Back to the future

Ingo Witzke

University of Siegen, Germany
witzke@mathematik.uni-siegen.de

Abstract

Based on evidence from theoretical and empirical research it is quite clear that beliefs play a decisive role in mathematical learning processes. Although it is still somewhat difficult to describe and measure direct effects, there seems no doubt that (epistemological) beliefs, belief systems – or in the German term, “Auffassungen” – of mathematics play a major role on “how one chooses to approach a problem, which techniques will be used or avoided, how long and how hard one will work on it, and so on. The belief system establishes the context within which we operate [...],” (Schoenfeld, 1985, p. 45). Looking at material used in present mathematics classrooms and empirical studies with a focus on beliefs, for example, in the domain of Calculus, we can identify interesting parallels to historical cases in the late 17th early 18th century. Especially on the level of epistemic beliefs this view *back* into the history of mathematics provides us with valuable insights and legitimations, as I will argue in my talk, for the present and *future* way of how to support mathematical learning processes in school and pre-service teachers’ education.
