TSG 21
NEUROSCIENCE AND MATHEMATICS EDUCATION / COGNITIVE SCIENCE

The Organizing Team

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Positioned in the field of Educational Neuroscience, research in mathematics education faces the scientific community with great challenges. Ultimately, the question is, how to reveal neuronal processes in a way that the results of the research can be effectively utilized to promote the teaching and learning of mathematics. At the same time it is under discussion how this research objective can henceforth be achieved at all. The objective of this TSG consists in contributing further clarification by presenting and discussing present Neuroscience research regarding mathematics education.

There is a great variety of included disciplines, such as Neuroscience, Cognitive Science, Psychology, Biology, Medicine, Computer Science and, lastly, Mathematics and Mathematics Education. The contributions of this TSG are supposed to mirror this variety. While the connection to mathematics education may in singular cases be loose, it always has to be present.

The main focus will be on research directly connected to mathematical content from a neuroscientific or cognitive scientific perspective while taking into account the mathematics educational perspective. Current content on cognitive numerical magnitude representation can be expected as well as – on a broader scope – nature of number representation and on underlying cognitive or even neurological processes involved in arithmetical or geometrical thinking. Moreover, processes in cases of advanced

mathematical thinking, usually connected to more advanced mathematical concepts, will be taken into account.

Another option is the presentation of basic Neuroscience research, i.e. concerning arithmetical or geometrical understanding of animals, about theoretical approaches, among those also such with mathematical modelling or regarding possibilities and limitations of methods currently used in brain research.

Due to the broad spectrum of the expected contributions TSG 21 participants are asked to participate in the review process preceding the conference. Merging expertise and interdisciplinarity is the declared objective.