Berlin Mathematics Research Center MATH+

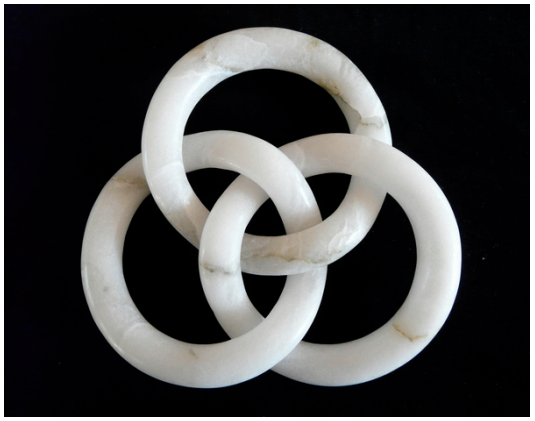
Berlin Mathematical School BMS

MATH+ Friday Colloquium

Friday 27 January 2023 at 14:15

HU Berlin, Erwin-Schrödinger Zentrum, room 0'115

Tea & Cookies starting at 13:00!



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Bruno Vallette

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Why higher structures?

Over the past 50 years, higher algebraic structures have gradually been appearing in algebra, geometry, topology, and mathematical physics. They were understood to provide us with better insights on the various objects of study, so their use lead naturally to proofs of open conjectures. While classical structures, like associative, commutative or Lie algebras, are often defined by one operation, these new higher structures, like homotopy algebras or higher categories, are often made up of infinite series of coherent structural operations. One should not be afraid of that as there are efficient and conceptual ways to encode them, like operad theory.

The goal of this talk will be to introduce gently these kind of ideas starting from accessible examples and finishing with new fundamental theorems. These higher structures are nowadays proving their universality by penetrating nearly all the domains of mathematics and more, e.g. computer science. They are therefore expected to continue to play a key role in the future.

Bruno Vallette is full professor at the Université Sorbonne Paris Nord and he was a junior member of the Institut Universitaire de France. His main goal amounts to developing a new and higher type of universal algebra which can be used at the largest possible scale, like for instance in algebra, geometry, topology, mathematical physics, or computer science. Together with Jean-Louis Loday, he published a book called "Algebraic Operads", which became the reference in this field.