Bern-Fribourg Graduate Seminar

a seminar for Master and PhD students

Wednesday 5$^{\text{th}}$ April, 2023: 17:15 - 18:00

Room B7, Exakte Wissenschaften, Bern

Ulrik Thinggaard Hansen

University of Fribourg

Loewner Chains: From the Bieberbach Conjecture to Fields Medals.

Abstract

Loewner Chains are flows of ordinary differential equations that have been at the very forefront of mathematical progress over the last 25 years, yielding novel results in mathematical physics, probability theory, conformal field theory and complex analysis itself. Two Fields Medals have been awarded for work directly tied to them, and many a mathematical career been launched. In this talk, we are going to take a look at the very first occurrence of Loewner Chains in the literature, the seminal work of Karl Loewner from 1923. After sketching what Loewner was using these flows for, we are going to look at his construction of the flow more closely and finally, explain Oded Schramm's key 1998 insights that launched Loewner Chains into the 21st century in an altogether different field. It is a romantic tale of interconnecting mathematical ideas and the time it might take for a good idea to truly mature.