Éric Colin de Verdière | Université Gustave Eiffel
Title: Optimization with topological constraints for graphs on surfaces, and the multicut problem

Abstract: Most of the talk will survey (not so recent) results in computational topology for graphs on surfaces: Given a surface equipped with an appropriately discretized metric, how to compute systoles (shortest non-contractible closed curves), shortest cut graphs (whose removal leaves an open disk), shortest homotopic curves?

Then we will turn to a seemingly very different problem in the field of graph algorithms, the multicut problem. The previous tools can be combined to solve it efficiently when the input graph has small genus and few terminals.

(Survey of works with/by several persons.)