MATH+ Spotlight Talk
27 April 2022

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Optimizing the operation theatre

Abstract:
The operation theatre represents up to 40% of hospital costs. The optimization of available resources (medical staff, operating rooms) is all the more important as patients sometimes have to wait several months before having an operation. Operating room management is a complex problem, where tactical and strategic decisions are made in an uncertain environment (duration of operations, emergencies, no-shows) with conflicting interests at stake (equity of access to care, cost reduction, amount of working time).

In this talk, Guillaume Sagnol will give an overview of these challenges, and show how simple approaches can attack some fundamental aspects of the problem, which can be modeled mathematically as packing or scheduling problems. Our results are mostly of theoretical nature (with a focus on bounding the performance guarantee of certain algorithms and measuring the benefit of adaptive policies), but simulations show that our approach can be implemented by taking complex real constraints into account, and bring an important gain compared to the standard method used in hospitals.