



## *colloquia@iasi*



*"La mente è come un paracadute.  
Funziona solo se si apre"  
A. Einstein*

### **Which modelling approach for the glucose/insulin metabolism of T1D and T2D patients?**

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#### Abstract

Diabetes is a widespread chronic disease due to the lack of endogenous insulin (type 1) or to an increased resistance (type 2) or both. In both cases, the metabolic control loop based on the beta cells in the pancreas does not work properly. This has prompted generations of control engineers to look for a way to replace the missing control action delivering the so called artificial pancreas, which is now in advanced state. Interestingly, artificial pancreas is based on methods and tools which were initially developed for the process industry, in particular for refineries, and is based on models. These systems, however, operate under very different conditions, in particular they offer a high level of reproducibility. Against this background, this talk discussed the rationale of some choices in terms of modeling and control, presents alternative and suggests to consider a change in paradigms, in particular to go away from a deterministic description corrupted by noise to a purely stochastic description which seems to be more consistent with the data of type 1 patients and even more with type 2 ones.