

**Alfio  
Quarteroni**

Politecnico di Milano, EPFL

## Physics-Based and Data-Driven-Based Algorithms for the Simulation of the Heart Function

Thu. July 6, 2023 • 14:00H

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### Physics-Based and Data-Driven-Based Algorithms for the Simulation of the Heart Function

Speaker: Prof. Dr. **Alfio Quarteroni**

Politecnico di Milano and Ecole Polytechnique Fédérale de Lausanne

Organized by: **FAU MoD**, Research Center for Mathematics of Data  
FAU Friedrich-Alexander-Universität Erlangen-Nürnberg  
(Germany)

In this talk I will present a mathematical model that is suitable to simulate the cardiac function, thanks to its capability to describe the interaction between electrical, mechanical, and fluid-dynamical processes occurring in the heart.

The model comprises a system of nonlinear differential equations (either ordinary and partial) featuring a multi-physics and multi-scale nature. Efficient numerical strategies are devised to allow for the analysis of both heart function and dysfunction. These strategies rely on both classical physics-based numerical discretization methods and machine-learning algorithms, as well as on their interplay.

#### WHEN?

Thursday **July 06, 2023**

14:00H

#### WHERE?

Online

Zoom meeting link:  
[shorturl.at/hmDQU](https://shorturl.at/hmDQU)Meeting ID: **614 4658 1599**PIN: **914397**