

Mathematical & Computational Modelling of Problems from Clinical Medicine

In this talk I will delve into the application of mathematics in the biomedical sciences, highlighting challenges and successes. Using examples from neurosurgery and oncology, I will discuss the use of High-Intensity Focused Ultrasound (HIFU) in cancer treatment. In particular, I hope to showcase how mathematical models offer insights into treatment optimization in hydrocephalus, aid in understanding tumor development and treatment response, and shape the evolution of non-invasive HIFU as a cancer therapeutic strategy. These examples underscore the impactful role of mathematical and computational modeling in understanding physiological dysfunctions and devising effective interventions in clinical medicine.