

Deuflhard, Peter. 1999. Differential Equations in Technology and Medicine. Computational Concepts, Adaptive Algorithms, and Virtual Labs. CIME Lectures. Preprint SC 99-34. (September 1999). Notes: 66 pp.

<https://opus4.kobv.de/opus4-zib/frontdoor/index/index/docId/422> . Accessed 23 March 2023.

Abstract: This series of lectures has been given to a class of mathematics postdocs at a European summer school on *Computational Mathematics Driven by Industrial Applications* in Martina Franca, Italy (organized by CIME). It deals with a variety of challenging real life problems selected from clinical cancer therapy, communication technology, polymer production, and pharmaceutical drug design. All of these problems from rather diverse application areas share two common features: (a) they have been modelled by various *differential equations* – elliptic, parabolic, or Schrodinger–type partial differential equations, countable ordinary differential equations, or Hamiltonian systems, (b) their numerical solution has turned out to be a real challenge to computational mathematics.

Keywords: differential equations, model, cancer, therapy tumor, polymer, drug, design