

A MODEL-BASED APPROACH TO THE FORWARD AND INVERSE PROBLEMS IN SPIROMETRY

Adam G. Polak

*Chair of Electronic and Photonic Metrology, Wrocław University of Technology,
Wrocław, Poland*

The respiratory system is one of the most essential systems sustaining human life. Its complexity raises, however, serious difficulties when one is trying to analyse the lung structure or function experimentally. An alternative approach consists in conducting research via mathematical modelling. This paper reviews the most essential model-based approaches to the so-called forward and inverse problems in spirometry, focusing on research the author has been involved in. A few selected results achieved with the aid of the mathematical models of the forced expiration illustrate the state of the art, and current challenging issues in modelling the respiratory system are depicted.

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