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Dreams of calculus. Perspectives on mathematics education.

Springer, Berlin (ISBN 3-540-21976-5). 171 p. (2004).

The book presents evidence that mathematics education today is in a process of change of paradigm, caused by the revolutionary new possibilities offered by the computer. The authors complement the physicist Eugene Wigner's famous statement concerning "the unreasonable effectiveness of mathematics natural sciences", by presenting evidence of "the reasonable effectiveness of computational mathematics". The book may also serve as an introduction to the Body&Soul mathematics education reform project reflecting the new paradigm. In a first part, the authors (researchers in computational mathematics) present a brief history leading into applications of computational mathematics today. In a second part, they present key applications of computational mathematics for simulation of the motion of the planets in our solar system by solving Newton's equation, and turbulence by solving the Navier-Stokes equations. The book is stimulated by the work of the Mathematics Delegation created by the Swedish Minister of Education in 2003 with the task of analyzing the current crisis in mathematics education on all levels.

Classification: D30 E20 A30 R20