

Citation for John Dennis (DMath, Mathematics)

Mr. Chancellor, I present John Dennis.

John Dennis is renowned for his fundamental contributions to continuous optimization. In the early 1960s, optimization practitioners had essentially two choices for solving large-scale optimization problems on the computers: “*steepest descent*” and “*Newton’s method*.” Even though many researchers suspected that attaining the best properties of both methods simultaneously must be possible, it was John Dennis’ seminal work with Jorge Moré, that firmly established the conditions under which such properties are attainable. This work remains a landmark result.

In addition, Professor Dennis’ co-authored a book with Robert Schnabel has become the standard text for understanding the fundamental methods of optimization and algorithms for solving systems of nonlinear equations. About 15 years ago, Professor Dennis turned his attention to derivative-free optimization, and in the 1990s, Professor Dennis and his students revived this previously languished area, brought it to the forefront and initiated wider industrial applications. He has also contributed greatly to solving engineering optimization problems.

Professor Dennis is currently the Noah Harding Professor Emeritus and research professor in the Department of Computational and Applied Mathematics at Rice University. From 1988 to 1993, he was adjunct professor in the Department of Combinatorics and Optimization at the University of Waterloo, where he actively participated in research activities and mentored graduate students.

Professor Dennis was the founder and editor-in-chief of the Society for Industrial and Applied Mathematics Journal on Optimization and co-editor of Mathematical Programming, as well as an advisory editor of Mathematics of Operations Research. These are the top three journals in continuous optimization and mathematics of operations research. Professor Dennis has directed 35 PhD theses, and his students hold wide ranging positions in industry, government, and academe.

Mr. Chancellor, in recognition of his outstanding contributions to continuous optimization, I request that you confer the degree Doctor of Mathematics, honoris causa, upon John Dennis.