



Professor Richard Tapia

University Professor,

Dept. of CAAM/OR

Rice University

Date: Friday, April 28, 2023

Time: 1 - 1:50 pm

Location: CEMO101

A Completion of Euler's Approach to the Isoperimetric Problem

Abstract: In 1744 in a legendary work, Euler presented a contribution to the understanding of the isoperimetric problem using a Cartesian coordinate representation of the problem. Many scholars believed that Euler thought that he had established necessity for the isoperimetric problem; when in reality he had not. However, a close look at his work shows that not only did he not establish necessity, but he did not claim that he had. Hence, the criticism that has been showered on him by mathematical historians concerning a false proof is not deserved. The major contribution in this presentation is a proof that the circle solves the isoperimetric problem based on Euler's Cartesian coordinate formulation of the problem. In other words a completion of Euler's approach to the isoperimetric problem; a proof nearly 300 years in the making.

Biography: Richard Alfred Tapia is an American mathematician in the department of Computational Applied Mathematics and Operations Research and University Professor at Rice University, the university's highest academic title. In 2011, President Obama awarded Tapia the National Medal of Science for his distinguished contributions to the mathematical frontiers of optimization theory and numerical analysis and his long-time work in inspiring underrepresented minority and female students in science and math. Among his numerous honors is the National Science Board's Vannevar Bush Award and election to the National Academy of Engineering, the first Hispanic to receive these honors. He holds eight honorary doctorates and has given ten commencement addresses at major universities. Two professional conferences have been named in his honor: the Richard Tapia Celebration of Diversity in Computing Conference and the Blackwell-Tapia Mathematics Conference. Tapia served on the National Science Board from 1996-2002. Because of his leadership Rice University is recognized as a national leader in the preparation of women and underrepresented minority doctoral degree recipients in science, engineering, and mathematics