An Euler Trifecta (Abstract)

William Dunham

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Abstract:
To recognize Leonhard Euler’s 300th birthday, we sketch his life and give a brief survey of some of his mathematical achievements. Then we’ll consider three specific results from this great mathematician. The first is his 1740 proof that there are as many ways to write a whole number as the sum of distinct summands as there are ways to write it as the sum of (not necessarily distinct) odd summands – the discovery that gave birth to the study of number partitions. Next, we get a glimpse of his calculus skills from 1775 as he evaluates a definite integral that no one would dare to touch in Calc II. Finally, we examine Euler’s unorthodox proof of his famous identity from 1749. Taken together, these examples remind us why it is so fitting that we celebrate his birthday in 2007. This talk should be accessible to undergraduate students with a bit of calculus under their belts.

About the speaker:
William Dunham, who received his B.S. (1969) from the University of Pittsburgh and his M.S. (1970) and Ph.D. (1974) from Ohio State, is the Truman Koehler Professor of Mathematics at Muhlenberg College. Trained in general topology, Dunham became interested in the history of mathematics. He has directed NEH-funded seminars on math history at Ohio State and has spoken on historical topics at national and regional meetings as well as at the Smithsonian Institution, on NPR’s “Talk of the Nation: Science Friday,” and on the BBC. In the 1990s, Dunham wrote three books – Journey Through Genius (1990), The Mathematical Universe (1994), and Euler: The Master of Us All (1999) – and in the present century he has written two more: The Calculus Gallery: Masterpieces from Newton to Lebesgue (2005) and The Genius of Euler: Reflections on His Life and Work (2007). Dunham’s expository writing has been recognized by the MAA with the George Pólya Award in 1993, the Trevor Evans Award in 1997, and the Lester Ford Award in 2006, and the Association of American Publishers designated The Mathematical Universe as the Best Mathematics Book of 1994.