

Chauvenet Prize

The Chauvenet Prize, consisting of a prize of \$1,000 and a certificate, is awarded to the author of an outstanding expository article on a mathematical topic. First awarded in 1925, the Prize is named for William Chauvenet, a professor of mathematics at the United States Naval Academy. It was established through a gift in 1925 from J.L. Coolidge, then MAA President. Winners of the Chauvenet Prize are among the most distinguished of mathematical expositors.

William Dunham

“The Early (and Peculiar) History of the Möbius Function,” *Mathematics Magazine*, 91:2 (2018) 83–91.
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This paper begins by presenting an infinite series for which the exact value is sought. At first glance, the reader will probably think this looks like something that would interest Euler or one of the many Bernoullis. However, a closer look reveals that there are no obvious patterns in the series.

Dunham begins his attack on the problem using the Möbius function. This is a surprising connection, but also one that leads the reader to be curious about how a function whose values are -1 , 0 , or 1 will help with the computation. Dunham’s careful exposition answers that question and gives a surprising result. The value of the complicated series is just x . But the journey is not over. Dunham goes back in time to show that what is commonly known as the Möbius function (1832) is a different version of an idea of Euler’s (1748).

This paper is a delight to read. Dunham’s clear exposition and careful computations are illuminating and interspersed with interesting historical information. Each step he takes is easy to follow, and like all good mathematical tales, the connections between seemingly unrelated ideas become obvious once they are demonstrated.

Response

Receiving the 2022 Chauvenet Prize for my paper on the origins of the Möbius function is certainly a career highlight.

This topic fell into my lap when I happened, by chance, upon the collected works of August Ferdinand Möbius in a dark and dusty corner of the Bryn Mawr College Library. This led me to connect Möbius to my favorite mathematician, Leonhard Euler, whose awesome talents were the highlight of the article.

The Chauvenet Prize means so much because of those who received it in the past. These include such recent recipients as Ravi Vakil and Bjorn Poonen, earlier winners like Barry Mazur and Tom Hawkins, and—if we go further back—immortals like Paul Halmos and the superbly-named Dunham Jackson.

But the Chauvenet Prize particularly resonates because, in 1932, it went to G. H. Hardy. More than 80 years later, Jerry Alexanderson, Don Albers, and I edited a volume titled *The G. H. Hardy Reader* for MAA Press and Cambridge. In the process, I learned much about Hardy—the brilliant mathematician and colorful character—and came to regard him as one of the great mathematical expositors. To have my name on the same list as his is an honor beyond measure.

Biographical Sketch

William Dunham (PhD, Ohio State, 1974) is a historian of mathematics who has authored four books on the subject: *Journey Through Genius*, *The Mathematical Universe*, *Euler: The Master of Us All*, and *The Calculus Gallery*. In 2015–2016 he was the MAA’s George Pólya Lecturer, and he is featured in the Teaching Company’s DVD course, “Great Thinkers, Great Theorems.” After retiring from Muhlenberg College (emeritus, 2014), he has held visiting positions at Harvard, Princeton, Penn, Cornell, and Bryn Mawr, where he is currently a research associate in mathematics.