

2016 Nerenberg Lecture

Tuesday, April 5, 2016

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The Life of Pi: A Talk for Pi Day and Other Days
3M Centre Building, Room 3250 at 7:30 p.m.

Abstract:

The desire to understand π , the challenge, and originally the need, to calculate ever more accurate values of π , the ratio of the circumference of a circle to its diameter, has captured the imagination of mathematicians—great and less great—for many many centuries. And, especially recently, π has provided compelling examples of computational mathematics.

Pi, uniquely in mathematics, is pervasive in popular culture and the popular imagination. In this lecture I shall intersperse a largely chronological account of π 's mathematical and numerical status with examples of its ubiquity.

The slides for this talk are lodged at

<https://www.carma.newcastle.edu.au/jon/piday-14.pdf> and the accompanying paper [5] is stored at <https://www.carma.newcastle.edu.au/jon/pi-2012.pdf>.

References:

- [1] J.M. & P.B. Borwein, and D.A. Bailey, "Ramanujan, modular equations and pi or how to compute a billion digits of pi," *MAA Monthly*, **96** (1989), 201-219. Reprinted in *Organic Mathematics*, <http://www.cecm.sfu.ca/organics/>, 1996, *CMS /AMS Conf Proceedings*, 20(1997), ISSN: 0731-1036.
- [2] J.M. Borwein and P.B. Borwein, "Ramanujan and Pi," *Scientific American*, February 1988, 112{117. Also pp. 187-199 of *Ramanujan: Essays and Surveys*, Bruce C. Berndt and Robert A. Rankin Eds., AMS-LMS History of Mathematics, vol. 22, 2001.
- [3] L. Berggren, J.M. Borwein and P.B. Borwein, *Pi: a Source Book*, Springer-Verlag, (1997). Second Edition, (2000). Third Edition, January 2004.
- [4] D.H. Bailey, and J.M. Borwein *Mathematics by Experiment: Plausible Reasoning in the 21st Century*, AK Peters Ltd, 2003, ISBN: 1-56881-136-5.
- [5] J.M. Borwein, "The Life of Pi." Extended and updated version of "La vita di pi greco," volume 2 of *Mathematics and Culture, La matematica: Problemi e teoremi*, Giulio Einaudi Editori, Turino, Italian, 2008) (French, in Press). Pages 532-561 of *From Alexandria, Through Baghdad: Surveys and Studies in the Ancient Greek and Medieval Islamic Mathematical Sciences* in Honour of J.L. Berggren, Sidoli, Nathan; Van Brummelen, Glen (Eds.) Springer-Verlag 2014.
- [6] J.M. Borwein and Scott T. Chapman, "I Prefer Pi: A Brief History and Anthology of Articles in the American Mathematical Monthly." I, 122 March 2015, 195-216.