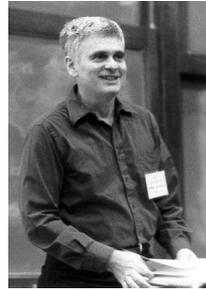# University of Florida, Mathematics Department
THIRD RAMANUJAN[*] COLLOQUIUM
by
Professor Dorian Goldfeld[**]
Columbia University
on
Multiple Dirichlet series

Date and Time: 4:00 - 5:00pm, Monday, February 23, 2009
Room: TUR L011
Refreshments: After the lecture in the Atrium (LIT 339)

OPENING REMARKS
by
TBA

Abstract: This talk will be partly historical and aimed at a general audience. Ramanujan was fascinated by the problem of counting primes. He wrote several papers connected with the Riemann zeta function. Dirichlet introduced generalizations of the Riemann zeta function (now called Dirichlet L-functions) to prove that there exist infinitely many primes in an arithmetic progression. In this talk we introduce the theory of multiple Dirichlet series (MDS) which are Dirichlet series in several complex variables. The main goal is to construct MDS which have as many of the properties of the Riemann zeta function as possible: meromorphic continuation; group of functional equations; Euler product, etc. We shall outline the development of the theory of MDS in recent years and focus on some applications to moments of special values of Dirichlet series of one complex variable. The talk will end with a description of a beautiful class of MDS known as WMDS (Weyl group multiple Dirichlet series) which can be constructed from any root system of a classical Lie group.

NOTE: After the Ramanujan colloquium, Professor Goldfeld will give two Number Theory Seminars on related topics at 12:50 pm on Tues, Feb 24, and at 10:40am on Wed, Feb 25 in LIT 339 (The Atrium).

[*] ABOUT RAMANUJAN: Srinivasa Ramanujan (1887-1920), a self-taught genius from South India, dazzled mathematicians at Cambridge University by communicating bewildering formulae in a series of letters. G. H. Hardy invited Ramanujan to work with him at Cambridge, convinced that Ramanujan was a "Newton of the East"! Ramanujan's work has had a profound and wide impact within and outside mathematics. He is considered one of the greatest mathematicians in history.

[**] ABOUT THE SPEAKER: Dorian Goldfeld is one of the most eminent number theorists in the world. He has made seminal contributions to analtyic number theory, the theory of modular forms, automorphic functions, and cryptography, among others. Together with Michael and Irish Anshel, he founded the field of Braid Group Cryptography. In 1987 he was awarded the Cole Prize of the American Mathematical Society for his solution of Gauss' class number problem for imaginary quadratic fields. He received his BA from Columbia University in 1967 and his PhD there in 1969 under the supervision of Patrick Gallagher. He held positions at Berkeley (Miller Instructorship, 1969-71), Insititute for Advanced Study, Princeton (1973-74), MIT (1976-82), the University of Texas, Austin (1982-85) and Harvard (1983-85) before returning to his alma mater Columbia in 1985 as Professor. He was a Sloan Fellow (1977 - 79) and received the Vaughn Prize in 1985. He serves on the Editorial Board of Acta Arithmetica and The Ramanujan Journal.

ABOUT THE SPONSOR: Evan Pugh Professor George Andrews of The Pennsylvania State University is the world's premier authority in the theory of partitions and work of the Indian mathematical genius Srinivasa Ramanujan combined. He is a Member of the National Academy of Sciences. He has close ties with the UF Mathematics Department which has one of the strongest programs on mathematics related to Ramanujan's work. He was a recipient of an Honorary Doctorate from UF in December 2002. Since 2005, he is a Distinguished Visiting Professor each year in the Spring term in the Mathematics Department. He is currently President of the American Mathematical Society.

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