

**HOVDE DISTINGUISHED LECTURE**

# *L-FUNCTIONS AND LANGLANDS PROGRAM*



***FREYDOON SHAHIDI***

**DISTINGUISHED PROFESSOR OF  
MATHEMATICS**

**FELLOW OF THE AMERICAN MATHEMATICAL SOCIETY**

**AMERICAN ACADEMY OF ARTS AND SCIENCES ELECTED FELLOW**

**JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE FELLOW**

**CLAY MATHEMATICS INSTITUTE PRIZE FELLOW**

**JOHN SIMON GUGGENHEIM FELLOW**

**INVITED SPEAKER AT THE INTERNATIONAL CONGRESS OF  
MATHEMATICS**

Primes are basic building blocks of whole numbers. They constitute a beautiful foundation of theoretical mathematics, and in modern practical usage, larger and larger primes are fundamental in banking and credit card transactions. Euclid is credited with the first proof that there are infinitely many primes. Leonhard Euler gave another proof by presenting the divergent series of the sum of the reciprocals of natural numbers as a certain product over all the primes. This talk will focus on similar and more general infinite sums, including Euler products or L-functions, with which Gustav Dirichlet showed that every arithmetic sequence contains infinitely many primes. Langlands program, named after mathematician Robert Langlands, was an effort to generalize and define L-functions in a much more general setting and has led to far-reaching progress in many parts of mathematics from automorphic forms and number theory to arithmetic geometry and representation theory, and even physics. Langlands program has been described as the grand unified theory of mathematics. In this talk I will survey the program through examples, applications and connection to my work, the Langlands-Shahidi method.

**OCT. 31 • 3:30 P.M. • STEW 218ABCD**

**A RECEPTION WILL TAKE PLACE IN STEW 218ABCD PRIOR TO THE LECTURE**