

The Fullerton College Mathematics Colloquium  
presents

## **Triet Tahien**

Fullerton College

**“A Clay Millenium (\$1 million) Prize Problem: Are There Smooth, Physically Reasonable Solutions to the Navier-Stokes Equations? ”**

**ABSTRACT:**

At the 2011 Pacific Summer Unsolved Mathematics Seminar held at FC, Professor Edriss Titi (UCI and the Weizmann Institute), gave an introductory talk on the Navier Stokes Equations, which are a collection of equations that can be used to model the motion fluids, weather, and even completely different things such as economic conditions. There are three main parts to these equations, the first one essentially Newton’s second law of motion of an object with an unknown velocity  $u(x, t)$  as a point  $x$  in, say, 2- or 3-dimensional space at time  $t$ , subject to the application of an external force (for example, gravity), say, some incompressible fluid (such as water), given that the velocity of the object (fluid particle) is known at some initial time ( $t = 0$ ). Mr. Tahien will give a detailed definition of these equations, and he will consider examples as time permits, explaining what it means to solve these equations, and what it means for a solution to be physically reasonable and smooth. The problem of either finding a smooth, physically reasonable solution to these equations in general or finding a counterexample showing that they are not always true, is considered one of the seven most important open problems in mathematics.

Mr. Ta is an excellent FC student who placed second at FC in the AMATYC Student Math League Competition last year, contributing to FC’s highest ranking ever, 6th in the nation, in the competition.

## **Dr. Dana Clahane**

Fullerton College

**“Are There Any Quasiperfect or Odd Superperfect Numbers, and if So, How Many Are There?”**

**ABSTRACT:**

The Navier-Stokes equations, yes, are one of the seven most important mathematical problems to solve, but there is a more simply stated problem that is actually the oldest unsolved problem in mathematics. In particular, Dr. Clahane will review former FC student Alex Higgins’ (now an Industrial Mathematics major at West Virginia University) short paper on the question of existence of odd perfect numbers or infinitely many perfect numbers exist. Dr. Clahane will also explain what quasiperfect numbers and superperfect numbers are. Quasiperfect numbers are easy to define, but it is not known if any actually exist, and superperfect numbers are generalizations of superperfect numbers. No mathematical background past division is needed to understand this talk.

**Thursday, November 8, 2012  
12:45-2:50pm  
North Science Building, Room 623  
Fullerton College  
321 E. Chapman, Fullerton CA 92832-2095**

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