



## Frank H. Thorne

Tuesday, December 6, 2011

*Department of Mathematics  
University of South Carolina  
1523 Greene St.  
Columbia, SC 29208  
Email: [thorne@math.sc.edu](mailto:thorne@math.sc.edu)  
<http://www.math.sc.edu/~thornef>*

To whom it may concern:

I am pleased to strongly recommend **Richard Oh** for an internship with the FBI.

Richard is currently a graduate student at the University of South Carolina, where I am in my first semester on the faculty. Richard took my graduate course on analytic number theory, and he was easily the strongest student out of a class of nine.

My course was rather ambitious. I decided to use Davenport's book *Analytic Number Theory*, as opposed to gentler introductions to the subject which had been used at USC in the past. My course covered a variety of elementary and complex analytic topics in the subject (indeed, more than one of at least my colleagues seemed to think wise), and the lectures and the homeworks made full use of technical tools such as Fourier transforms and complex contour integration. I assigned weekly problem sets as well as a term project.

Richard's overall homework score was the highest of anyone. He consistently solved difficult optional problems that were avoided by many others, and he wrote up his solutions impeccably well: indeed, I would rate his ability to write mathematics clearly as higher than that of the average professor.

His term project was also one of the two best in the class. He chose to tackle the research literature and present a paper of Dorian Goldfeld, giving a simple proof that  $L(1, \chi_d) \gg d^{-\epsilon}$ . Goldfeld's writeup was quite short, and Richard thoroughly mastered his paper and wrote a much longer paper explaining all of the additional details in the proof. Richard also gave an excellent lecture on this paper; it was clear that he understood both the details and the big picture.

Richard has serious research ambitions; he has become quite interested in the zeroes of the zeta function, and he has already begun reading difficult research papers on the topic. He is also quite interested in cryptography, which explains his interest in the FBI. As his personal statement outlines, he has considerable background in the topic. I expect that an FBI internship will involve doing serious mathematics, and will require him to clearly explain it to others. Richard has already demonstrated outstanding ability on both accounts.

It looks as if Richard is interested in writing a Ph.D. thesis with me; if so, he will be my first graduate student. I could not be more delighted. He has shown me dedication, curiosity, persistence, and talent, and he is a very pleasant person to talk to. I anticipate that he will be an overwhelming success at the FBI as well as in our Ph.D. program; he has my very strong recommendation.

Sincerely,

Frank Thorne  
Assistant Professor of Mathematics