between neurons’ synchronized electrical activity and sensory information processing, motor skills and associative learning. “What are the fundamental biophysical mechanisms that make them synchronize their activity?”

Schwemmer, a guitarist, was first attracted to Queens College’s Aaron Copeland School of Music, which he attended in high school. But math won out, thanks to a graduate-level class in number theory with assistant math chair Steven J. Kahan. “That made me appreciate how mathematics can be an art form.”

With Brumberg, Schwemmer examined action potentials, or electrical discharges, in neurons, looking at how cell geometry affects firing. “It was amazing to use math to understand biology,” he said. Upon graduation, he received the Claire and Samuel Jacobs Award for excellence in mathematics.

Brumberg is now working with Harold Levine (Hunter 2008), who is studying for a math Ph.D. at Oxford. “The only way the story could explode into intense romance is if both were attracted from the start.”

How does she know that? Differential equations tell her so.

Cornell mathematician Steven Strogatz first seized upon “Romeo and Juliet” in 1988 to inject drama into his teaching of differential equations. Levine gave “Romeo” her own spin in undergraduate research supported by the National Science Foundation and then wrote equations to explain “Hamlet,” “Henry V” and “Midsummer Night’s Dream.” Graphing the equations shows how the play will end, but change the conditions and the graphs and endings will differ wildly.

“It surprised me how surprised people are that you could do this,” she said. She presented her work at the 2007 Einsteins in the City International Student Research Conference, which alternates between CCNY and The Technical University of Vienna.

As the financial world imploded this year, critics vilified financial engineers — the once-vaunted quantitative analysts, or “quants,” who use mathematics to study and manage the market. Weren’t they responsible for creating those toxic mortgage derivatives?

Partly, but there’s plenty of blame to go around, and more should be heaped upon salespeople and rating agencies. Had the raters fairly valued those derivatives from the beginning, things might have turned out differently, most commentators agree.

“The field is bound to continue growing,” said Dan Stefanica, director of Baruch College’s Master’s of Financial Engineering (MFE) Program since it started in 2002. “With the advent of electronic trading, all transactions are recorded electronically. There are terabytes of information. You need models to sift through and process that information, which you can use to hedge your positions and invest more efficiently. You can’t go back to pencil and paper.”

Since the advent of financial engineers in the last decade, quants primarily determined exposure to risk and analyzed structured products. But today their algorithms also drive trading decisions, particularly at hedge funds.

The three pillars of financial engineering get equal emphasis in Baruch’s highly competitive program — mathematics, which creates a model; finance, which employs the model; and computer programming, which runs the model.

Baruch’s strategy of admitting only the most qualified candidates, not a predetermined number, appears to be paying off. Most students earn their degrees and quickly find work, if they aren’t in the financial industry already. Consider the 22 graduates of December 2008: Five worked in the sector; by February 2009, 11 others had landed jobs guaranteed to pay an average of $94,000 in the first year — an impressive record, especially in these nail-biting times.

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**THE SOLUTION:** There’s a 44 percent (more precisely, 7/16) chance that the professors will meet.

Here’s how to solve the problem:

Associate each arrival time between 1 p.m. and 2 p.m. with a real number \( r \) such that \( 0 < r < 1 \). The number \( r \) represents the part of the hour that has elapsed before the arrival. In this way the arrival times of the two professors determine a coordinate pair \((x, y)\) that corresponds to a point in the unit square with \( 0 < x < 1, 0 < y < 1 \).

The pair \((x, y)\) corresponds to a situation where the professors fail to meet if either \( y = x + 1/4 \) or \( x > y + 1/4 \) (see below).

In the first of these cases the point \((x, y)\) lies in the triangle that lies above the line \( y = x + 1/4 \). The area of this triangle is \( 1/2 \times 1/4 \times 1/4 = 1/32 \). Similarly, in the second case, the point \((x, y)\) lies in the triangle with area \( 9/32 \) that lies below the line \( x = y + 1/4 \). We deduce that the probability that the professors do not meet is \( 9/32 + 9/32 = 9/16 \).

Bearing in mind that a 100 percent guaranteed meeting would be 16/16, you subtract the probability you’ve derived of their not meeting (9/16) from that to get the probability that they will meet, 7/16.