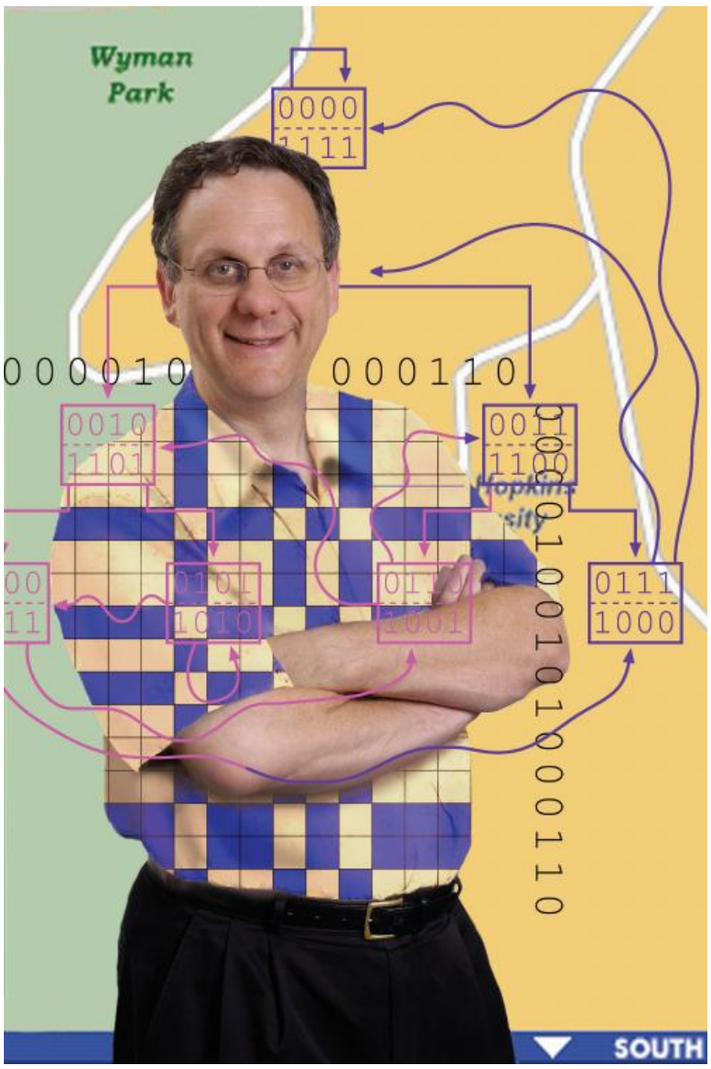
VCU Mathematics Colloquium

When Close Enough is Close Enough

Prof. Edward Scheinerman
Johns Hopkins University

Tuesday, Oct. 23
1:00–1:50
2084 Oliver Hall



Abstract. Is the following equation true:

$$\sqrt{\sqrt{6} - \sqrt{10 - \sqrt{96}}} = \sqrt{2} \ ?$$

If we calculate both sides numerically, we find that both are numerically equal to 1.4142135623730950488 to as many decimal places as we have shown. But does this *prove* these two algebraic expressions are equal? Perhaps their decimal expansions are different in the very next digit.

Surprisingly, we will show that if two such expressions are sufficiently close, then, in fact, they must be equal! We'll explain why and discuss an application to computational geometry.