1077-A0-4 **Jennifer Quinn***, University of Washington, Tacoma, Tacoma, WA. *Mathematics to DIE for: The battle between counting and matching.*

Positive sums count. Alternating sums match. So which is "easier" to consider mathematically? From the analysis of infinite series, we know that if a positive sum converges, then its alternating sum must also converge but the converse is not true. From linear algebra, we know that the permanent of an n x n matrix is usually hard to calculate, whereas its alternating sum, the determinant, can be computed efficiently and it has many nice theoretical properties.

In this talk, you will judge a combinatorial competition between competing techniques of counting versus matching. Be prepared to explore a variety of positive and alternating sums involving binomial coefficients, Fibonacci numbers, and other beautiful combinatorial quantities. How are the terms in each sum concretely interpreted? What is being counted? What is being matched? Do alternating sums always give simpler results? Which is the most elegant? The outcome is not predetermined. You decide! (Received March 09, 2011)