Abstract: Anyone who knew Dr. Sylvan Burgstahler knew that he loved his spreadsheets. He also had a very fertile imagination. Several years ago, he performed the following calculations: Taking Pascal’s triangle, he removed the rightmost 1 from each row. The resulting array looks like this:

\[
\begin{array}{cccc}
1 \\
1 & 1 \\
1 & 2 & 1 \\
1 & 3 & 3 & 1 \\
1 & 4 & 6 & 4 & 1 \\
1 & 5 & 10 & 10 & 5 & 1 \\
1 & 6 & 15 & 20 & 15 & 6 & 1 \\
& & & & & & \\
\end{array}
\]

\[
\Rightarrow
\begin{array}{cccc}
1 \\
1 & 2 \\
1 & 3 & 3 \\
1 & 4 & 6 & 4 \\
1 & 5 & 10 & 10 & 5 \\
1 & 6 & 15 & 20 & 15 & 6 \\
& & & & & & \\
\end{array}
\]

Next, he took the Maclaurin series for \( \tan(x) \):

\[
\tan(x) = x + \frac{x^3}{3} + \frac{2x^5}{15} + \frac{17x^7}{315} + \cdots,
\]

and considered it as an infinite vector: \((1, 0, \frac{1}{3}, 0, \frac{2}{15}, 0, \frac{17}{315}, 0, \cdots)\). Finally, he calculated the dot product of this vector with rows from his modified Pascal’s triangle to get a sequence of numbers

\[
1, \quad 1 + 0, \quad 1 + 0 + \frac{3}{3}, \quad 1 + 0 + \frac{6}{3} + 0, \quad 1 + 0 + \frac{10}{3} + 0 + \frac{10}{15}, \quad \cdots.
\]

This sequence starts: 1, 1, 2, 3, 5. Can you guess the next two terms? If you actually calculate the next two terms, there is a surprise.

In this talk, I will try to explain why this happens.