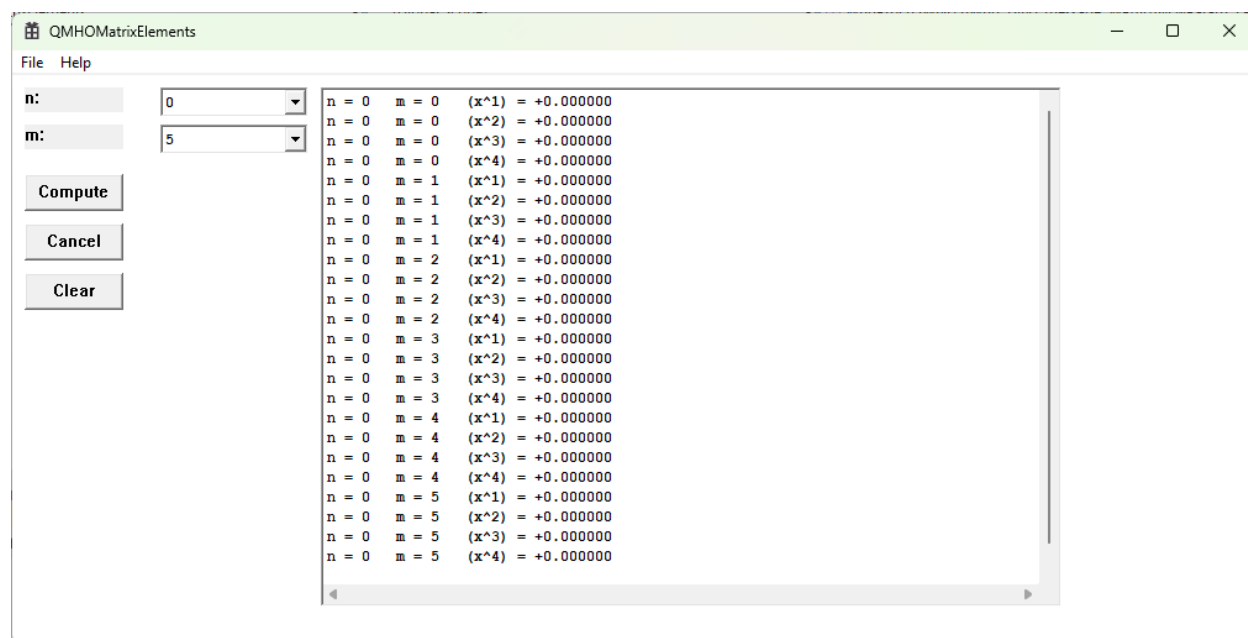


Blog Entry © Friday, October 31, 2025, by James Pate Williams, Jr. Quantum Mechanical Harmonic Oscillator Matrix Elements

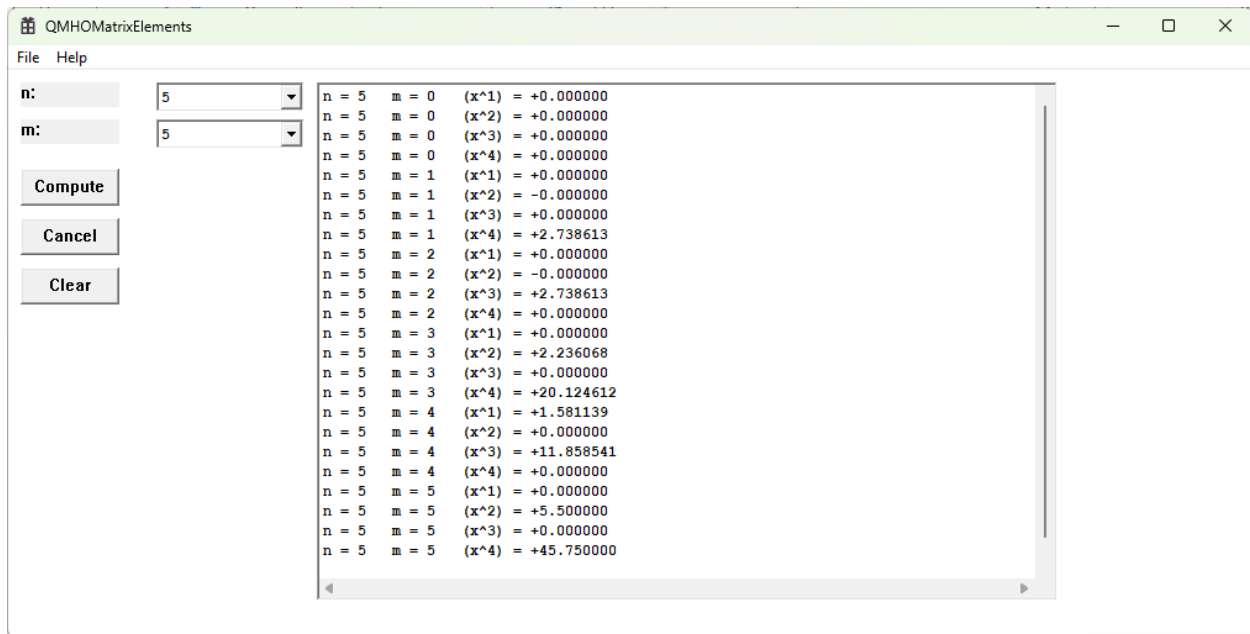
Reference: ***Introduction to Quantum Mechanics with Applications to Chemistry*** by Linus Pauling and E. Bright Wilson, Jr.

I wrote a Win32 C/C++ Desktop application to compute the following integrals:

$$\langle x^k \rangle_{nm} = \int_{-\infty}^{\infty} \psi_n(x) x^k \psi_m(x) dx$$



I set the limits of integration to -10 to 10 and use Simpson's Rule with 1024 steps.



I have attached the Win32 C/C++ driver source code file. Yesterday's blog entry has the Integration and Orthogonal Polynomials headers and source code files.