

[mex255] Inertia tensor of four-atomic molecule

Consider a four-atomic molecule with the atoms at the corners of a pyramid. The base is an equilateral triangle of side a . The height is h . The three atoms at the base each have mass m_1 and the atom at the tip has mass m_2 .

(a) Find the principal moments of inertia I_1, I_2, I_3 as functions of m_1, m_2, a, h for rotations about the center of mass.

(b) Identify the simplifications that occur when the pyramid is a regular tetrahedron of side a and all four masses are equal.

Solution: