

Problem 5.3

Problem Purpose

This problem will help you determine whether you have mastered the learning objectives for this unit.

Problem Statement

Consider the reaction between a diatomic molecule and an atom where the activated complex is non-linear. Use transition state theory to write out an expression that explicitly shows all the places that temperature appears in the rate coefficient. You may leave your answer in terms of masses, moments of inertia, vibrational frequencies, etc. of relevant species, but you must expand all summations and continuous products. Determine how many times the temperature appears.