Dennison, David Mathias 1900 - 1976

DEGREE: PhD (physics) DATE: 1924 PLACE: Michigan
TEACHER/RESEARCH ADVISOR: Klein

studied the structure of the methane molecule; applied the new quantum mechanics to a symmetric-top molecule, using matrix methods to calculate the rotational energy states, selection rules, and intensities; worked on homopolar diatomic molecules; resolved the disparity between calculated and measured values for the specific heat of the hydrogen molecule - providing the first quantitative evidence for the spin of the proton; solved (with Uhlenbeck) the quantum mechanical two-minimum problem that involves the quantum mechanical effect of tunneling; predicted the inversion of NH₃ - the experiment that proved the prediction was the first in microwave spectroscopy; studied the vibrational and rotational behavior of molecular systems; established (with T. Berlin) the general conditions for the stability of curved and linear orbits in electron accelerators; calculated the Fermi resonances of CO₂ and the rotational spectra of H₂O and CH₃OH; developed the alpha particle cluster model for calculating the energy of light nuclei.