GENEALOGY DATABASE ENTRY

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 NH_3 - 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 CO_2 and the rotational spectra of H_2O and CH_3OH; developed the alpha particle cluster model for calculating the energy of light nuclei.

1. *Dictionary of Scientific Biography*; Charles Scribner's Sons: 1970-1990; vol. 17, p220-222.
2. *Biog. Mem. Nat. Acad. Sci.* **1980**, *52*, 139-159.
3. *Am. J. Phys.* **1974**, *42*, 1051-1056.