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Restructuring Introductory Laboratories to Include Investigations at the Nanoscale KURT VANDERVOORT, ASIF HYDER, Physics Department, California State Polytechnic University, Pomona, CA 91768 — A series of laboratories are being developed to introduce atomic force microscope applications into introductory courses. The goal is to elucidate fundamental physics concepts at the nanoscale that will complement existing investigations at the macroscale, and to expose students to advanced instrumentation at an early level. Specific modules include: microscopic friction on bacteria cell membranes to complement existing labs on macroscopic friction for pulleys and a mass on an incline; microscopic magnetism exhibited by magnetic stripes on videotape to complement an existing lab on the spatial variation of the magnetic field of a solenoid; microscopic topography of smooth glass, rough glass, diffraction gratings and butterfly wings to complement existing labs on specular and diffuse reflection and interference of light; and microscopic capacitance and electrostatics to complement existing labs on electrolysis and electric field mapping. Funding for this project was provided by the National Science Foundation Nanotechnology Undergraduate Education program, award # 0406533.

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