



SACRAMENTO STATE

Department of Physics & Astronomy Spring 2006

Physics Colloquium Series

“van der Waals Forces on Atom Waves”

I will describe the origin of atom-surface van der Waals interactions and then describe several atom-optics experiments that serve to measure the strength of these interactions. In particular, the atom surface interaction potential can be expressed as $V(r) = -C_3/r^3$, and we have measured the coefficient $C_3 = 2.7 \pm 0.8 \text{ meVnm}^3$ for sodium atoms near silicon nitride surfaces. In one experiment with an atom beam interferometer we observe de Broglie wave phase shifts of 0.2 radians induced by nanostructure surfaces closer than 25 nm. Related articles are posted at www.atomwave.org.

Alex Cronin

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**Thursday, Feb. 9, 2006
4:00-5:20 PM MND 1015**

OPEN & FREE TO ALL STUDENTS, FACULTY & PUBLIC