

THE DEMONSTRATION CORNER

OPTICS, DENSITY, HOLOGRAPHY AND CURVE-FITTING

by

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Focal Point of a Mirror

Use a large concave mirror and several lasers (even two will do). Set the lasers to make beams parallel to the axis of the mirror, turn out the lights, and use chalk dust to show the location of the beams. Have students measure the position of the focal point of the mirror – they love it.

Density Rod

I bought from Boreal Scientific a density rod that floats in cold water but sinks in hot water. At the beginning of a class I just have it floating in cold water and add hot, but then go ahead and teach my lesson. Gradually students notice what is happening. Lots of questions! (Boreal Scientific #61402-10; \$17)

Holography

I would like to recommend a kit on holography – "Holokit," available from Integraf for \$73. (This includes developing chemicals, instructions, etc.) I ordered it last year and with a bit of effort our OAC classes made holograms. It fit into our light-interference part of the course, and took about two 45-minute classes. It generated lots of enthusiasm in the whole school. The only problem is that you need a fairly high-power laser (about 5-6 mW); however, these are available from MKS Industries in the U.S. for about \$250. Altogether a worthwhile investment. (Integraf, P.O. Box 586, Lake Forest, IL, U.S.A. 60045, FAX 708-615-0835; MKS Industries, 1269 Pomona Rd., Corona, CA, U.S.A. 91720, phone 714-278-0563)

Curve-Fitting

Dave Stock, the former head of physics at Humberside C.I., wrote a BASIC program for curve-fitting that allows students to input (x,y) data and perform a fit to an equation of the type $y = mx^n + b$. We use it on all the computers that we have available – from PETs to 486s. Please write me at Humberside C.I. if you would like to receive a copy of the code. There are no graphics included with the code, since graphics are computer-dependent, but I have a compiled version with graphics available for IBM. If you would like a copy, please send me a formatted high-density disk.

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Submissions describing demonstrations will be gladly received by the column editor.

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