

CONFERENCE

Reporting from a mattress in Nachod...



From left to right: **Figure 1.** Experimentation with peas, sand and rice in the granular materials session. **Figure 2.** Attendees engage in a workshop on art and music. **Figure 3.** Elizabeth Swinbank's SHAP talk.

What would be your response if you were invited to join a teachers' conference to be held in the small Bohemian town of Nachod, conducted almost entirely in Czech, where the accommodation would be on mattresses on the floor of a school, with DIY catering from the local supermarket?

If the invitation came from Leoš Dvořák and Irena Koudelková, leaders of the Heuréka project and some-time contributors to imaginative Czech displays at Physics on Stage, you would probably do as I did and accept immediately.

The Heuréka project started about 12 years ago, when teachers got together to develop a more active way of teaching physics. The emphasis is on a questioning approach, allowing students to learn from mistakes rather than be criticized for them.

There are now about 60 active participants who meet for seminars throughout the year and hold an annual conference at Nachod. More details about the project are available (in English) at kdf.mff.cuni.cz/Heureka/en.

For Nachod 2004 there were 14 workshops, arranged so that par-

ticipants had the opportunity to experience nearly all of them. For a session on granular materials (figure 1), the instructions were as follows: first, use graduated cylinders to measure out 50 ml of dried peas and 50 ml of rice. Mix in a bowl, then measure the combined volume and explain the difference. Alternatively, place a marble in a yoghurt pot, fill nearly to the brim with fine dry sand, then shake it up until the marble reaches the surface – and explain.

Contrasting sessions had us taking photographs with pinhole cameras and experimenting with digital photography. A series of demonstrations with radioactivity included instructions for making your own scintillation detector, as famously used by Geiger and Marsden for studying alpha radiation. Simply obtain some powdered phosphor – as used for coating TV screens – sprinkle a fine layer onto a piece of Sellotape and mount in a 35 mm slide holder. In total blackout, observe through a microscope eyepiece and allow 20 minutes for dark adaptation.

Other workshops included electronics, Newton's laws (which

incorporated skateboards), games and toys, measuring the speed of a rifle bullet, meteorology, art, music (figure 2) and dance. In the last of these we learned how to waltz elegantly by applying the principles of physics – it's all a matter of getting your centre of mass in the right place, apparently.

My own contribution (figure 3) presented some ideas from the Salters Horners Advanced Physics project (SHAP), where people were particularly intrigued by the gelatine strip used to model exponential attenuation of signals in an optical fibre. Details of this talk and other SHAP activities can be found on the new Institute of Physics and Nuffield-sponsored Practical Physics website at www.practicalphysics.org.

I'm pleased to report that the mattresses were more comfortable than you might have thought, and I'm grateful to all those who helped with translation, welcomed me to their workshop sessions and generally made me feel at home. Many thanks to Leoš and Irena for their kind hospitality.

Elizabeth Swinbank

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