



Tera-rays target terrorism

Terrorism and disease feature prominently in most people's lists of worries about the modern world. Now a breakthrough in the harnessing of what physicists call 'T-rays' promises a way of helping tackle both of these.

'T-rays' - short for terahertz rays - are an invisible part of the electromagnetic spectrum, which includes visible light, x-rays and radio waves. They are important because if they can be controlled they can be used to analyse and detect the presence of certain substances that other types of electromagnetic radiation cannot do, including body tissues and explosives.

Until now, researchers have struggled to focus T-rays properly by conventional means of lenses and mirrors in order to use them to their full potential.

But recently researchers at the University of Bath and in Spain have found a way to control the flow of terahertz radiation down a metal wire. They found that if a series of tiny grooves was cut into the wire, it guided the rays effectively.

This could lead to breakthroughs in examining very small objects such as biological cells where it might be possible to detect diseases or abnormalities. T-rays could also be directed to the interior of objects, which could be useful in applications like endoscopic probing for cancerous cells or explosives detection.

Dr Stefan Maier, now at Imperial College, London, worked on the project while at Bath, with Dr Steve Andrews, of the Department of Physics. His partners included the Universidad Autónoma de Madrid, and the Universidad de Zaragoza-CSIC. The project is funded by the Royal Society, the European Union and the US Airforce.