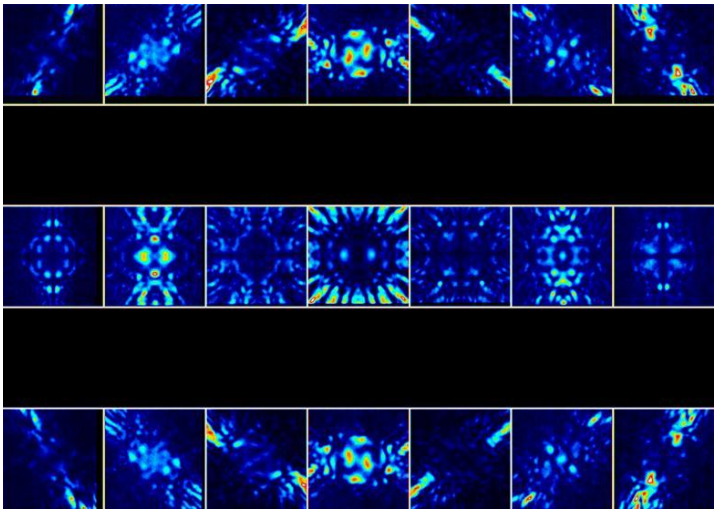
SEMINARIUM RENTGENOWSKIE

Dnia 26.08.2014r. o godz. 10.30, w Sali D Instytutu Fizyki PAN, odbędzie się seminarium rtg. na którym **Dr. Richard Beanland** of the Department of Physics University of Warwick, United Kingdom, wygłosi referat na temat:

"Pushing the boundaries of symmetry determination with 'digital' electron diffraction"

The symmetries in convergent beam electron diffraction (CBED) patterns and their relationship to crystal space groups were first explained almost 40 years ago, and there have been many investigations which have used this to solve crystal structures. The utility of CBED lies in the ability to obtain patterns from regions only a few nm in size, well below that attainable by other methods, sampling perfect crystal that is unaffected by defects or domain structure. Nevertheless, the technique is restricted by small Bragg angles, making it difficult or impossible to apply to materials with closely-spaced spots in a diffraction pattern. Use of computer control to collect patterns at different incidence angles is now relatively straightforward and overcomes this limitation. Many hundreds or thousands of CBED patterns can be combined into a single dataset of impressive complexity and beauty, which we call a 'digital' large-angle CBED (D-LACBED) pattern. The vast increase in information allows previously intractable problems of symmetry determination – particularly for materials with lattice parameters >1nm – to be solved with relative ease. We give several examples, including $AgNb_7O_{18}$, $Ca_2Mn_3O_7$, polarity measurements in thin PZT films, and polar nanodomains in $Na_{0.5}Bi_{0.5}TiO_3$. Prospects for the future, based on quantitative analysis of these data, will be outlined.



Digital large-angle convergent beam electron diffraction (D-LACBED) pattern from KTiOPO4 (KTP), a combination of over 2500 individual CBED patterns

dr hab. Sławomir Kret