

# Editorial

I am sad. Professor Sergey Maleyev (PNPI, Russia) died about 2 months ago. He was the first to derive the equations describing the behaviour of the neutron beam polarisation vector upon scattering. With his collaborators, he has triggered a series of projects worldwide to exploit the neutron beam polarisation at continuous neutron sources. This permits today to study and model very complex compounds like quantum systems and spin liquids. There is still a lot to accomplish to exploit polarised neutron beams, especially at pulsed sources, and the series continues with extremely challenging R&D projects launched worldwide. Thank you Professor.

In this first issue of 2021, after the article in memoriam of Prof. Maleyev, you will find the second article of a series dedicated to McStas, one of our most beloved tool for simulating neutron scattering instruments and experiments. With the authors, Kim Lefmann and Peter Willendrup, we hope that you will enjoy reading this review series and find lots of inspiration and useful information for your own simulations. I personally thank the publisher IOS Press for having accepted to publish it in Open Access for free to ensure its large widespread.

The next article presents a rare exhaustive experimental study of the multiple Bragg reflections accompanying allowed as well as forbidden reflections. After a very comprehensible introduction to multiple Bragg scattering, the authors present the techniques used to identify and observe multiple Bragg reflection effects. They then demonstrate how these effects can be used as a source of highly monochromatic and collimated beams for carrying out experiments requiring extremely high resolution. I would not be surprised to discover an instrument exploiting this discovery in the future.

The following article presents a complete description of the new detector of the PLATYPUS reflectometer (ANSTO, Australia). This detector is based on the successful mono-block aluminium multi-tube detector design already in use on several reflectometers and SANS instruments at the ILL (France). Installed into the 'recycled' PLATYPUS vacuum tank, this new detector improves very much the signal to background ratio and provides a spatial resolution of almost 1.5 mm in the vertical direction.

This issue ends with an article investigating the distribution of low counting statistics. As reminded by the authors, the gaussian approach adopted by most of us is robust but imprecise on all levels of count. They propose a Multinomial distribution to produce unbiased fits which, to my opinion, should be appended to the data analysis toolbox of all neutron experts willing to analyse their data rigorously.

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