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(POS-64) Revival of Neutron Scattering Capabilities at the McMaster Nuclear Reactor

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Neutron scattering is an invaluable tool for studying the bulk characteristics of condensed matter systems. With the shutdown of the National Research Universal (NRU) reactor at Chalk River in 2018, Canada lost its main source of neutrons for spectroscopy and diffraction experiments, forcing those working at Canadian institutions to look abroad. There is currently a national effort to rebuild and renew Canada's neutron scattering capabilities, and the centrepiece of this effort is "Building a Future for Canadian Neutron Scattering", a successful CFI project led by McMaster and a coalition of 17 Canadian universities. Over the next five years, this project will lead to a \$24 million investment in neutron scattering facilities at the McMaster Nuclear Reactor (MNR) and the construction of three new beamlines: a high-resolution neutron powder diffractometer, a neutron reflectometer, and a neutron stress scanning diffractometer. A new small-angle neutron scattering facility (MacSANS) is also scheduled to begin operation in Summer 2022. In this poster, we will describe new instrument development projects on the McMaster Alignment Diffractometer (MAD), a general purpose triple-axis spectrometer. This includes the commissioning of new sample environments, such as a 4K-800K cryofurnace, and the relocation of the detector from the C2 neutron powder diffractometer at Chalk River. The C2 detector is a gas filled (BF₃) multiwire detector, with an array of 800 vertical wires covering an angular range of 80 degrees with 0.1 degree angular resolution. This new equipment will introduce exciting capabilities for neutron powder diffraction, low temperature, and magnetic scattering experiments at the MNR.

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