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Vector Resolution of a Focusing SANS Instrument. Kenneth C. Littrell, IPNS Argonne National Laboratory, Argonne, IL.

Small angle neutron scattering (SANS) is one of the most popular and oversubscribed techniques at every user facility for neutron scattering studies of condensed matter that offers it. The limiting features in SANS experiment design and the applicability of a given instrument to a particular problem of scientific interest are the length of time required to make a measurement and the minimum momentum transfer Q that can be measured. In the traditional pinhole-camera geometry, these two constraints are inextricably linked, forcing tradeoffs. However, instruments based on lenses have been developed demonstrating how this linkage can be broken, allowing higher throughput while retaining high resolution and a low minimum Q . Previous experiments have shown that this is true for the vector resolution as well as the scalar, or orientationally averaged resolution. Here, we extend the previous results describing the theoretical resolution function of a focused SANS instrument to include the vector resolution, enabling the calculation of resolution broadening effects in oriented systems measured on a lens-based instrument.