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## Port-GISANS: A portable GISANS booster for revealing the structure of complex interfaces

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\*poster contribution

Port-GISANS will be a module to enable grazing incidence small angle neutron scattering (GISANS) experiments for existing and future small-angle neutron scattering (SANS) instruments by improving flux and signal to noise ratio. This will allow GISANS experiments at ESS from day one on its SANS instruments. By focusing the incident flux on the sample and improving the signal-to-noise ratio Port-GISANS will enable high quality surface scattering experiments with neutrons addressing scientific questions which currently remain unsolved. The increase in flux has the potential to extend the applicability of GISANS for areas unfeasible today, such as single lipid membranes, which serve as benchmark here, as well as other weakly scattering or high background systems. Some systems of interest to highlight include curvature induced phase separation of biomembranes [1], responsiveness of lipid membranes to external stimuli in situ, such as exposure to light for photolipids [2], as well as the hydration and in-plane structure of DNA composites during encapsulation by protective shells [3], and micellar nanoreactors [4]. We aim to present simulation results of the performance of this device as well as simulations of the scattering from a realistic sample.

[1] Paracini et al, ACS. Appl. Mater. Interfaces , 15, 3772-3780 (2023)

[2] Urban et al, Langmuir, 36(10), 2629-2634 (2020)

[3] Nguyen et al, Angewandte Chemie, 58, 912-916 (2019)

[4] Hintermayr et al, Nano letter, 19(8), 4928-4933 (2019)

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