On the scattering of polarized neutrons by solitons in low dimensional magnetic systems IRINA BARIAKHTAR, Boston College, VICTOR BARIAKHTAR, Insitute of Magnetism, Kyiv, Ukraine, ALEXANDER NAZARENKO, Acceletech, Framingham, MA — The cross section of the scattering of polarized neutrons by solitons in low dimensional systems with the magnetic structure is calculated. The authors consider solitons corresponding to the formation of a kink in a system of adatoms on the surface of a substrate or a crowdion in a chain of atoms in crystals described by the sine-Gordon equation, a breather with zero topological charge, and also solitons in a bound electron-phonon quasi-one-dimensional molecular chain. It is shown that study of the polarized neutrons scattering provides the possibility to investigate the static and dynamic properties of the solitons. In addition, the information obtained from the the neutron scattering allows for experimental reconstruction of the magnetic momentum distribution in these structures. We suggest that prospective experiments on observing and studying the solitons can deepen the insight into the physics of the strongly correlated systems.

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