DYNAMIC PROBES OF QUANTUM SPIN CHAINS:
MULTI-FERMION EXCITATION CONTINUA

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We calculate analytically the dynamic dimer and trimer structure factors of the one-dimensional spin-1/2 XX model in a transverse magnetic field at any temperature. In the framework of the Jordan-Wigner approach the accessible spectrum of the dimer (trimer) fluctuation operator is limited to two-fermion (two- and four-fermion) excitations. We examine some features of the four-fermion excitation continuum and compare them with the well known properties of the two-fermion continuum. Finally, we discuss the experimental relevance of the calculated structure factors. Our calculations extend the list of exact results for dynamic properties of quantum spin chains.

Further details can be found in Ref. 1.

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