Dynamic spin susceptibility of interacting electron systems[1]
VLADIMIR ZYUZIN, DMITRII MASLOV, University of Florida — We study the
dynamic spin susceptibility of interacting electrons in spatial dimensions from one to
three. In all cases, backscattering processes result in non-zero imaginary part of the
spin susceptibility above the particle-hole continuum of non-interacting electrons. In
one dimension, we employ the renormalization group to go beyond the second order
and obtain a general expression for the spin susceptibility. In higher dimensions, we
show that the imaginary part of the spin susceptibility arises from the same mecha-
nism as non-analytic corrections to the Fermi-liquid theory. We relate the obtained
results to the lifetime of collective spin modes.

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