

MAGNETIZATION PROCESSES IN QUANTUM
SPIN CHAINS WITH REGULARLY
ALTERNATING INTERSITE INTERACTIONS

O. Derzhko

Institute for Condensed Matter Physics
(1, Svientsitskii Str., Lviv 79011, Ukraine)

We consider the dependence of magnetization on field at zero temperature for spin- $\frac{1}{2}$ chains in which intersite interactions regularly vary from site to site with period p . In the limiting case, where the smallest value of the intersite interactions tends to zero, the chain splits into noninteracting identical fragments of p sites and the dependence of magnetization on field can be examined rigorously. We demonstrate explicitly the appearance of plateaus in such a dependence and discuss the presence of the magnetization values m predicted by the condition $p \left(\frac{1}{2} - m \right) = \text{integer}$ [1]. We comment on the influence of an anisotropy in the interspin interaction on the magnetization profiles. Finally, we show how the case of a nonzero smallest value of the intersite interactions can be considered.