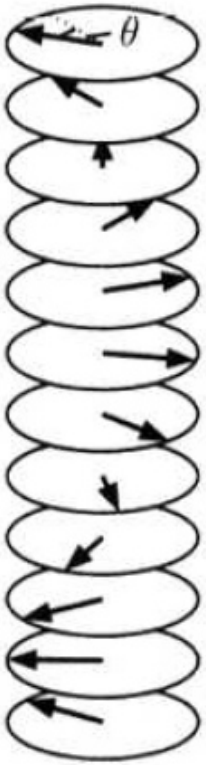
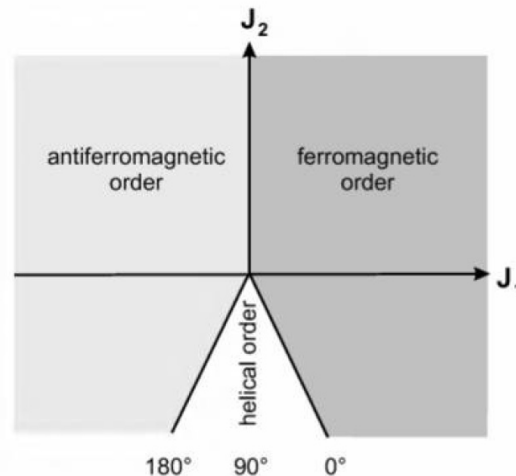


## RKKY interaction and helical order: a 1D model



$$H = - \sum_{ij} J_{ij} \vec{S}_i \cdot \vec{S}_j$$

with 1st and 2nd neighbor interactions  $J_1$  and  $J_2$



Helimagnetic structure is stable if exchange interactions are frustrated ( $J_2 < 0$ )

In the helimagnetic structure  $\cos\theta = -J_1/4J_2$

→ Incommensurate magnetic structure

Frustration of exchange interactions → very often helical or non-collinear structures