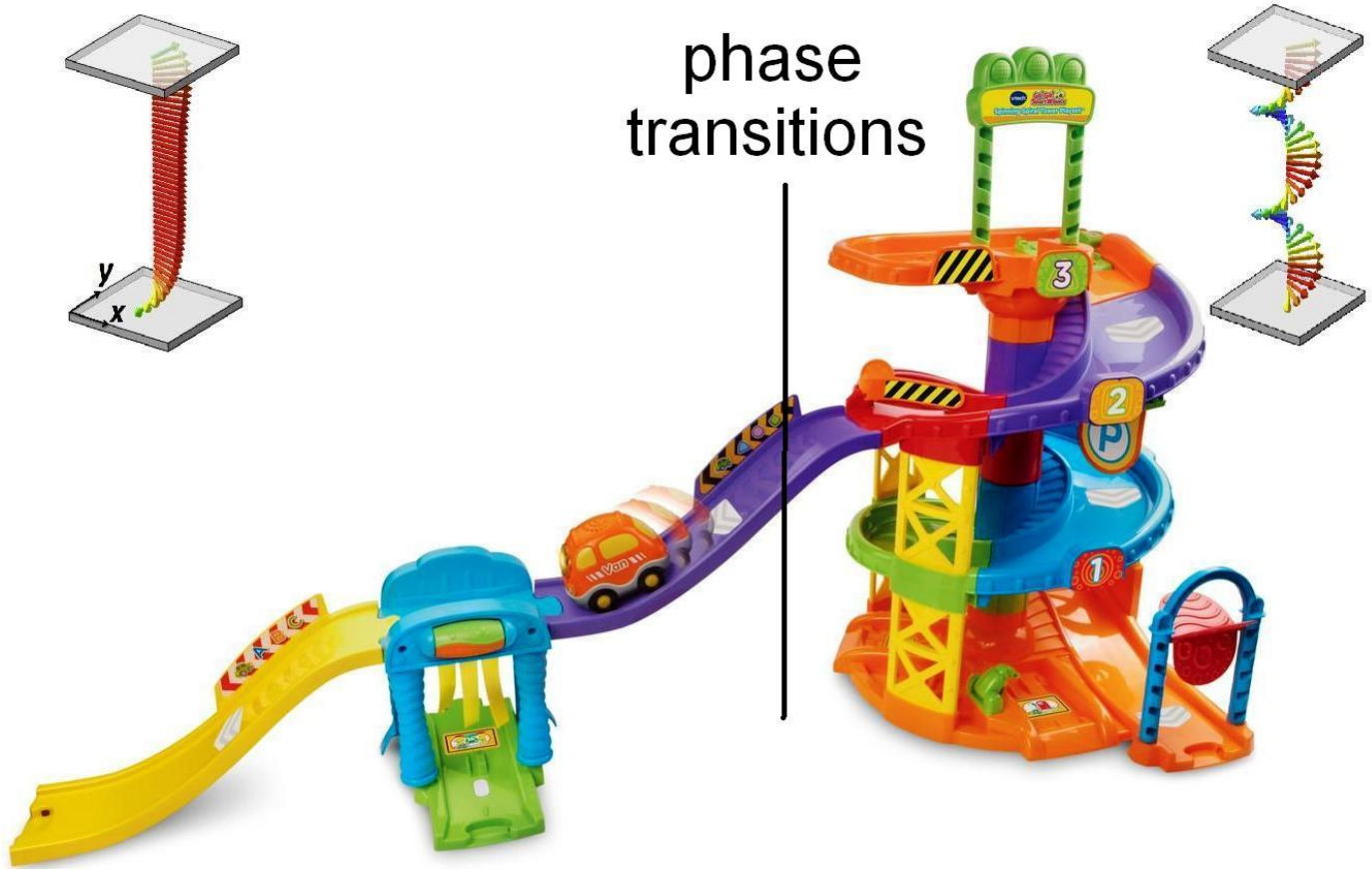
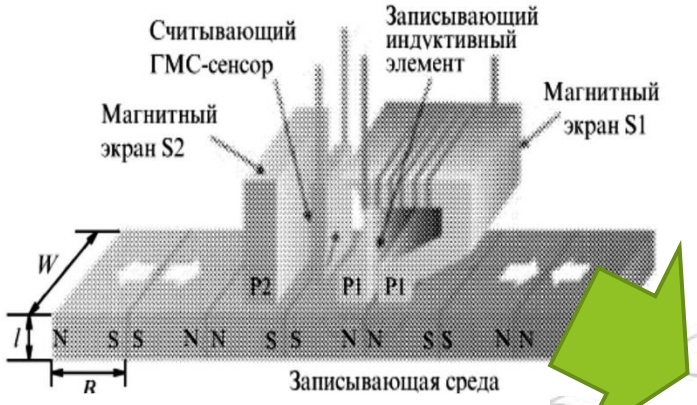
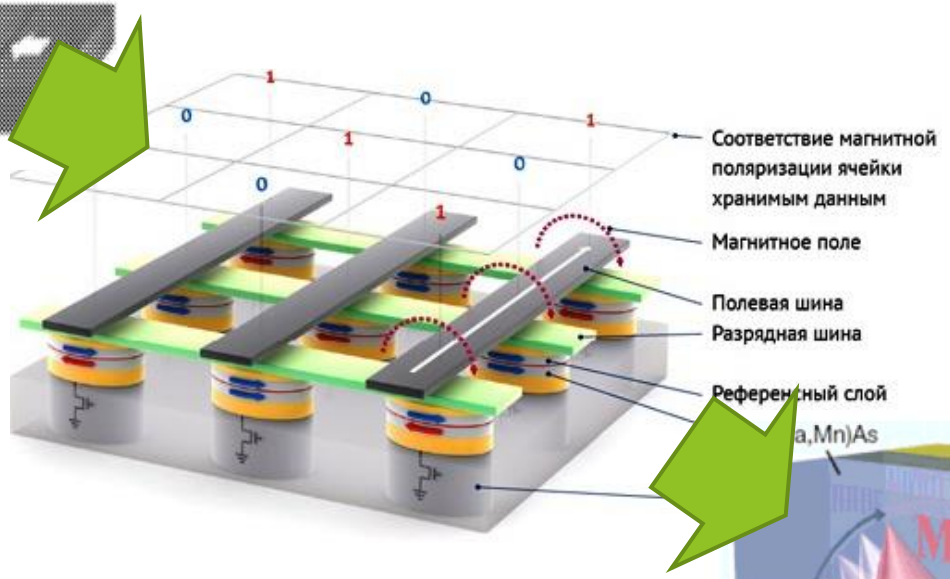


Концентрационная фазовая диаграмма несоразмерного геликоидального магнетика $Y_{1-x}Tb_xMn_6Sn_6$

А. А. Быков, Ю.О. Четвериков, А.Н. Пирогов, С.В. Григорьев

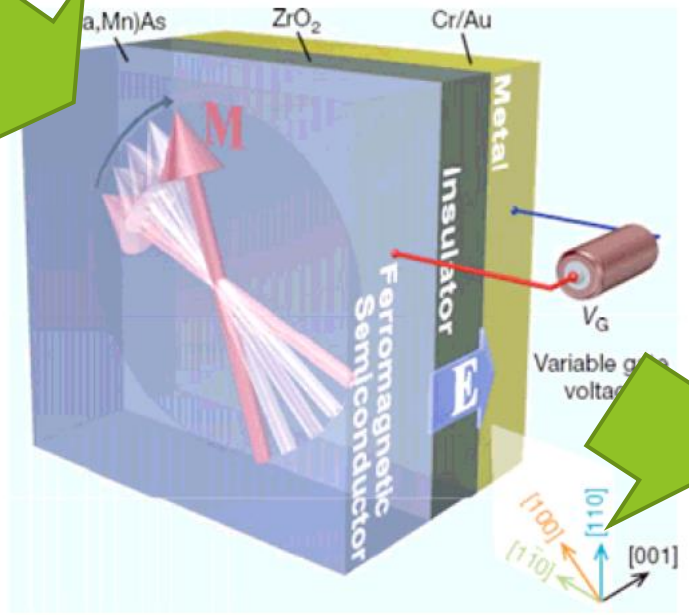
Спинтроника. Что дальше?



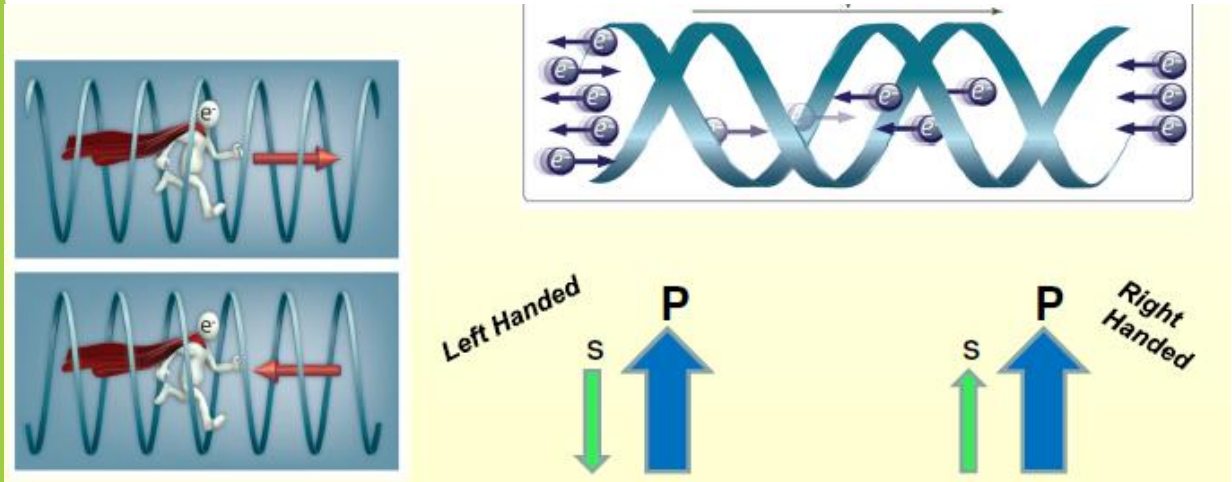


Материал спинового затвора:

1. Киральность
2. Температуры 250…350 К
3. Электрическая проводимость
4. Технологичность



Chiral induced spin selectivity



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Кристаллическая структура, взаимодействия и макроскопика класса $HfFe_6Ge_6$

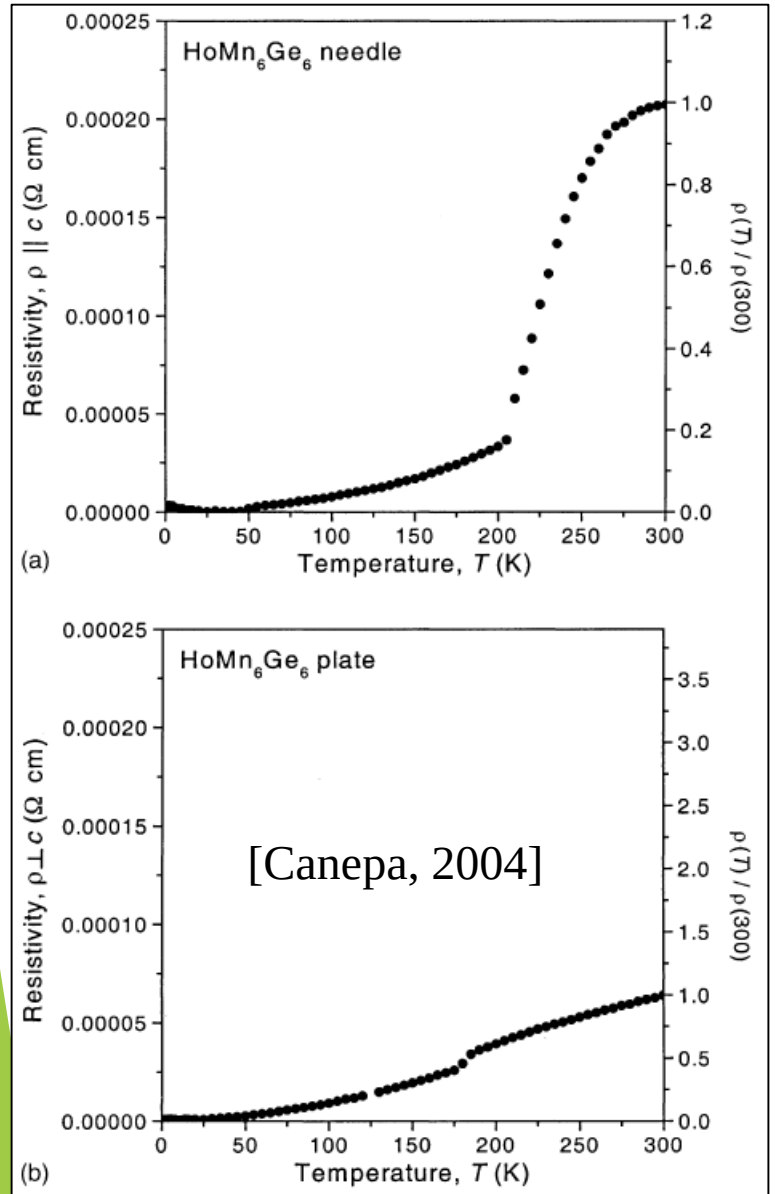
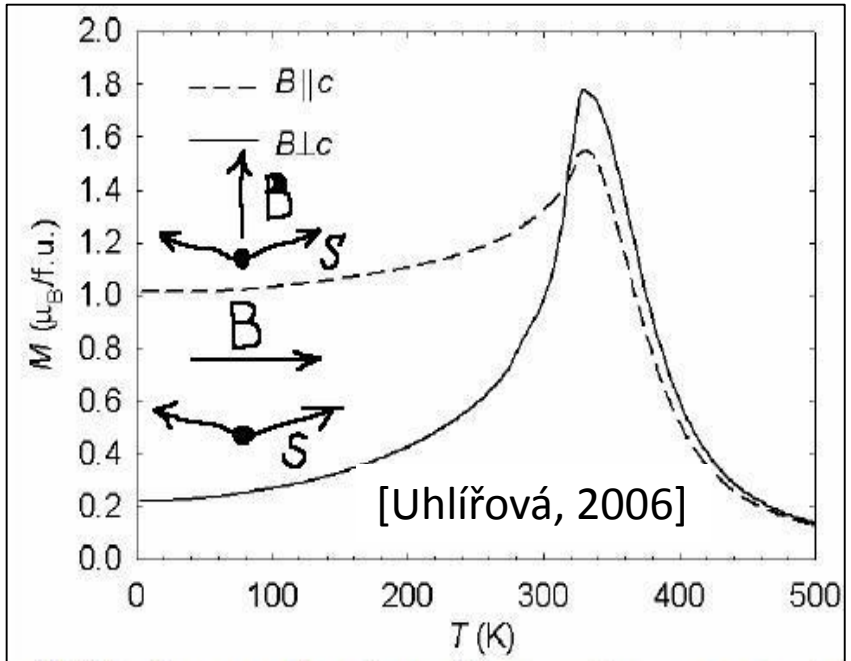
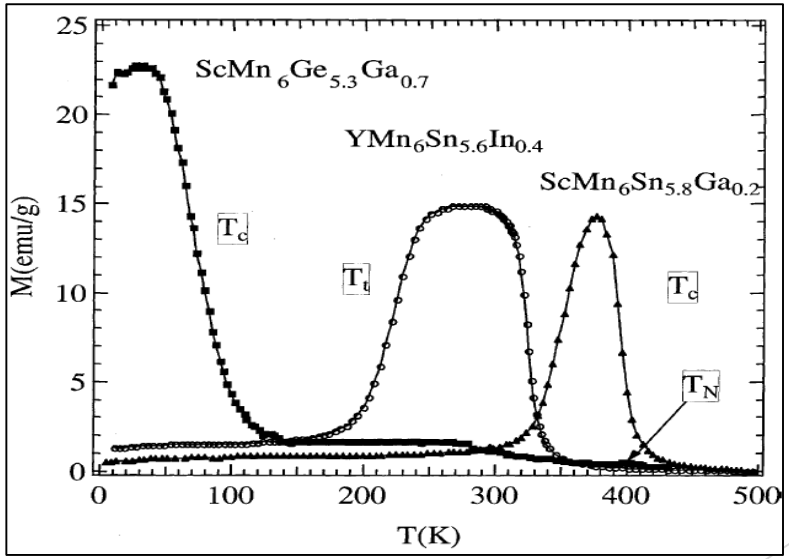
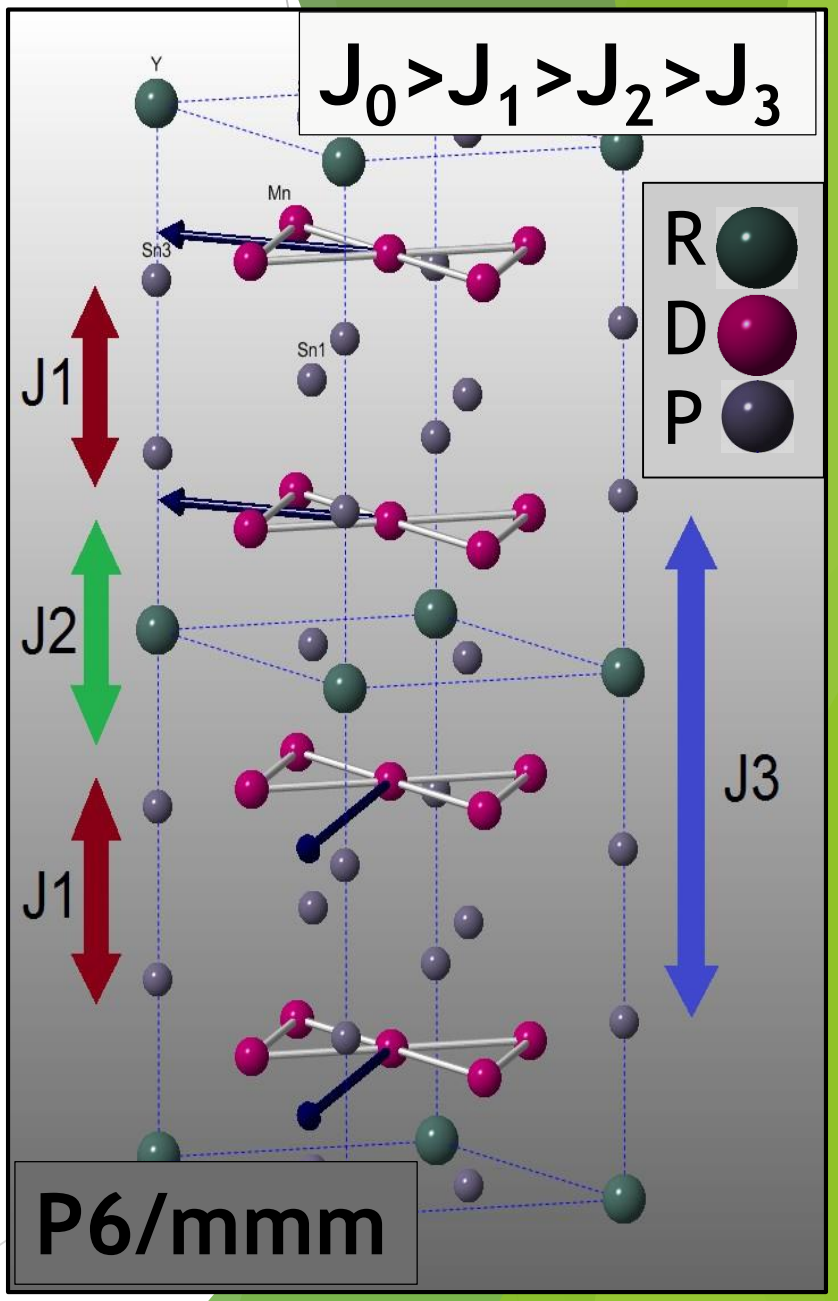


Fig. 8. Thermal variation of the conductivity along the [0 0 1] direction (a) and in the (0 0 1) plane (b) for $HoMn_6Ge_6$ single-crystals.



of YMn_6Sn_6 as a function of temperature, measured i





Разнообразие структур $HfFe_6Ge_6$. Допирование и фазовые диаграммы.

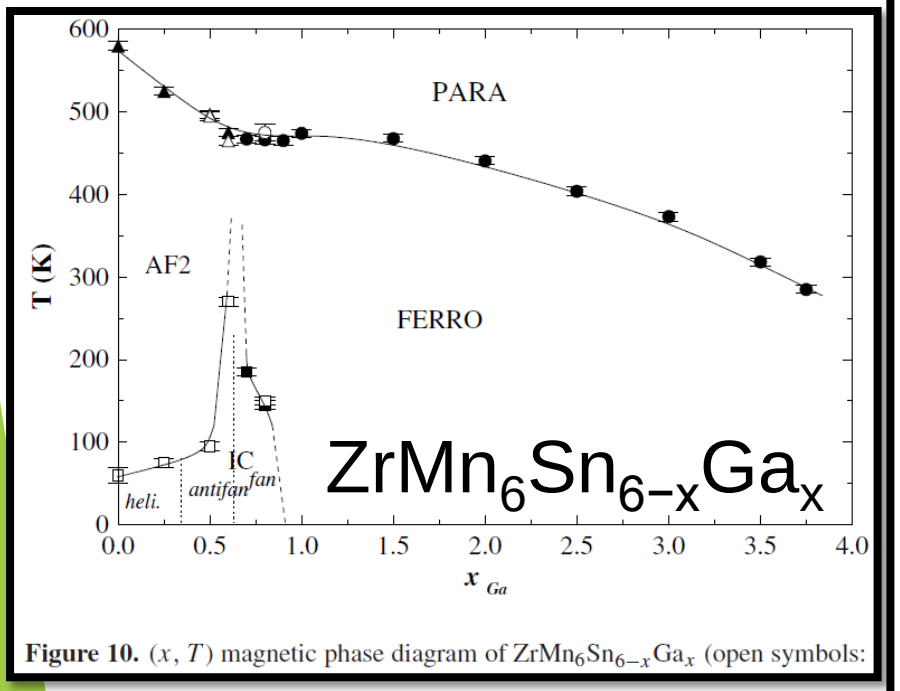
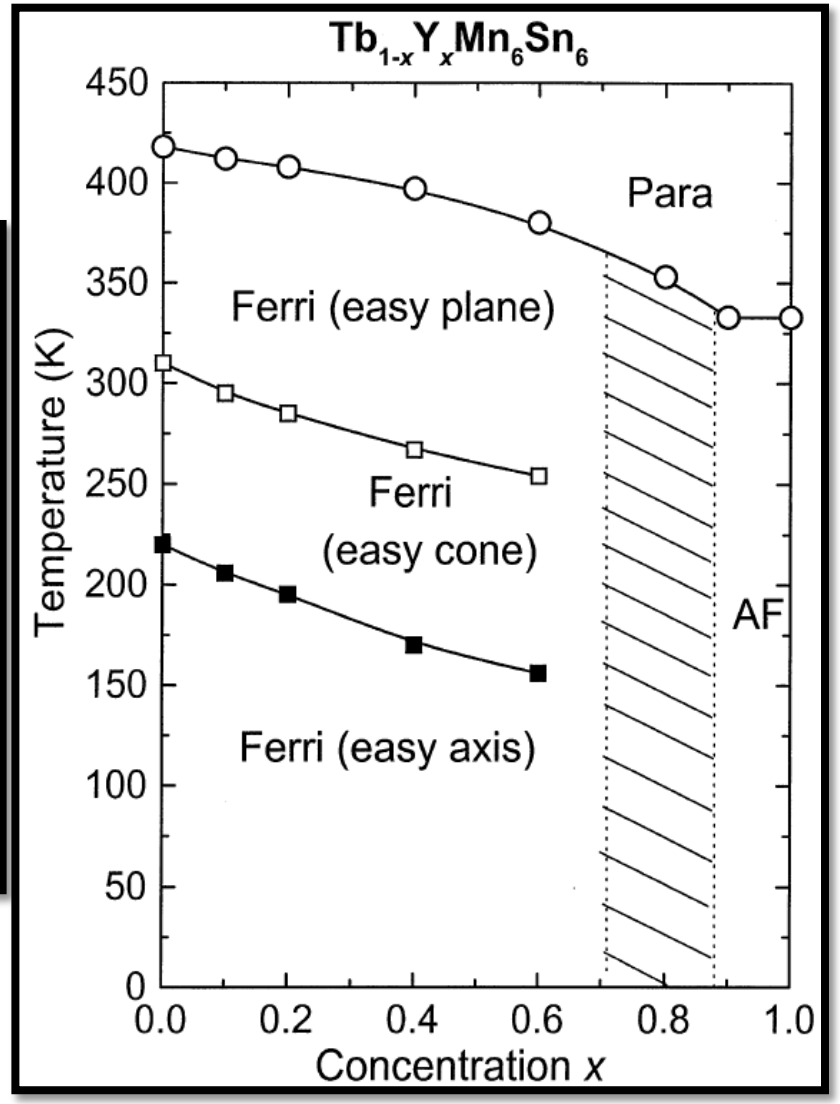
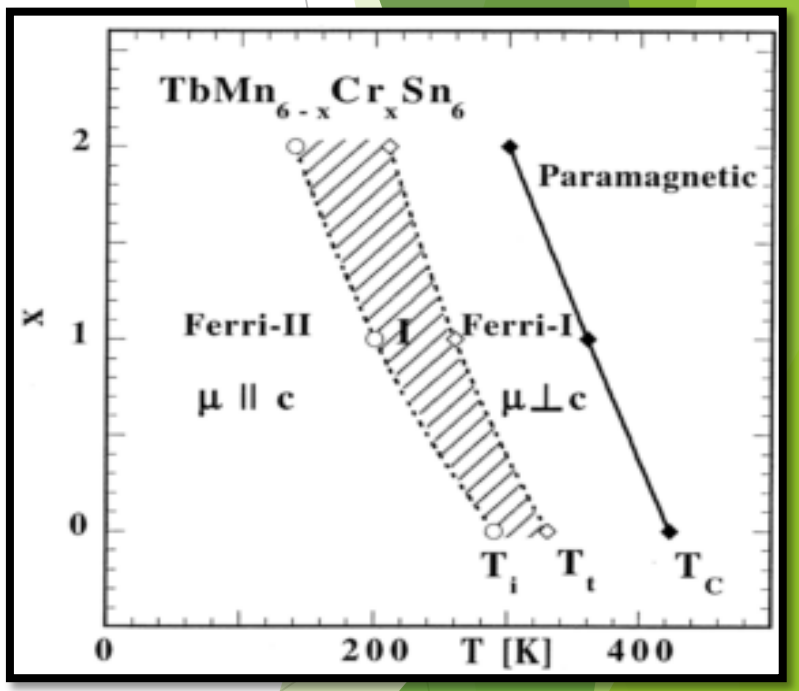


Figure 10. (x, T) magnetic phase diagram of $ZrMn_6Sn_{6-x}Ga_x$ (open symbols:

[Mazet, 2005]



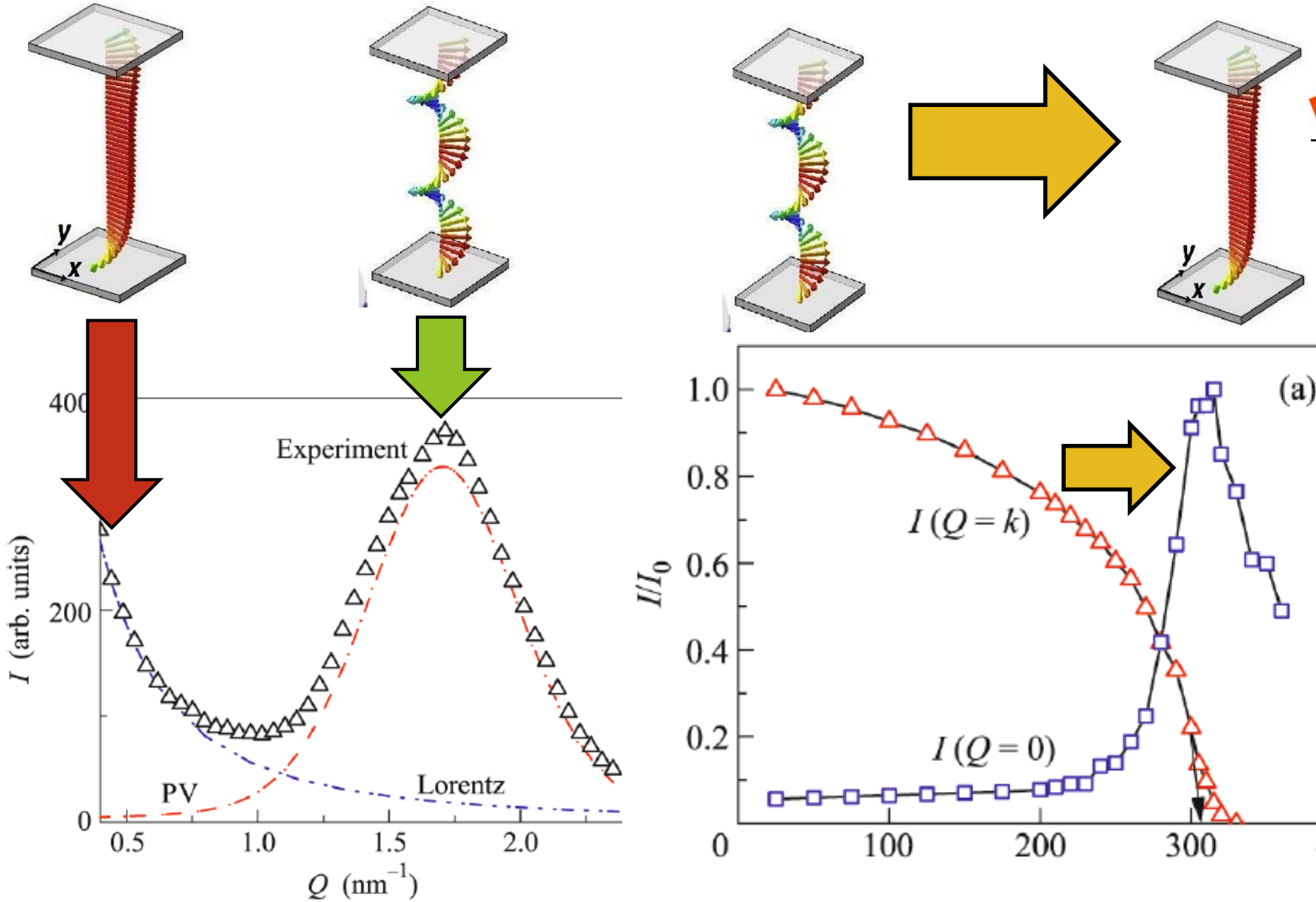
[Zajkov, 2004]

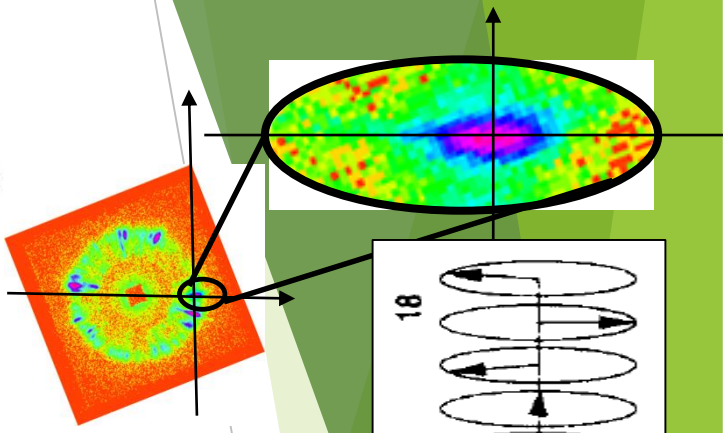


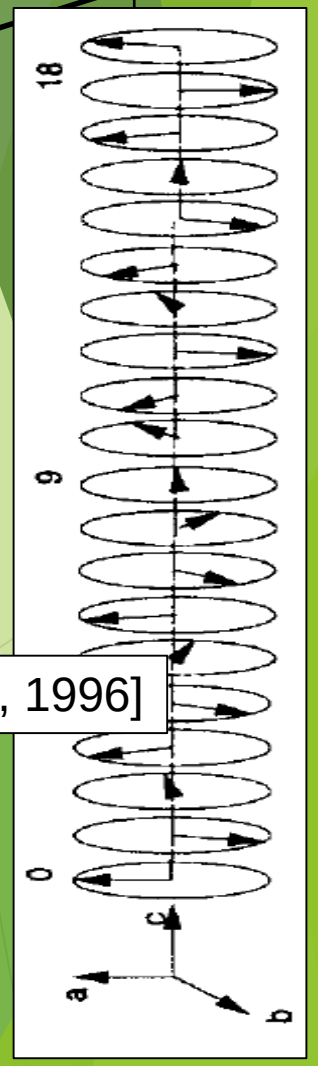
[Schobinger-Papamantellos, 2000]

Quasi-Two-Dimensional Character of the Magnetic Order–Disorder Transition in YMn_6Sn_6

A. A. Bykov[a, b, *], Yu. O. Chetverikov[b], A. N. Pirogov[c, d], and S. V. Grigor'ev[a, b]

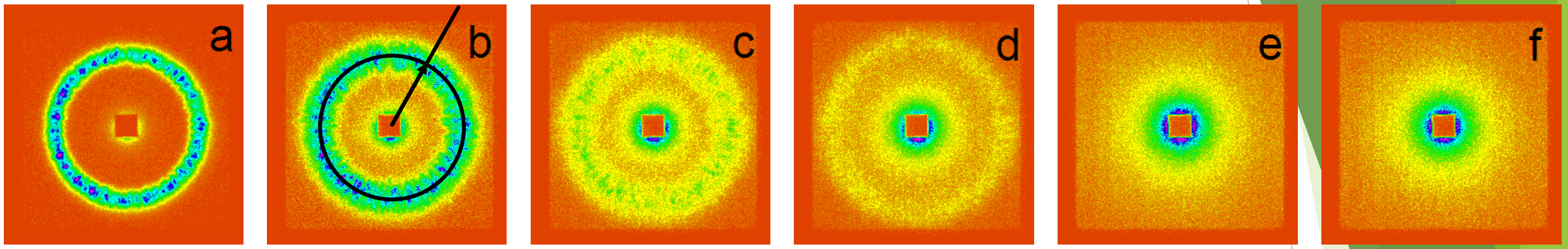




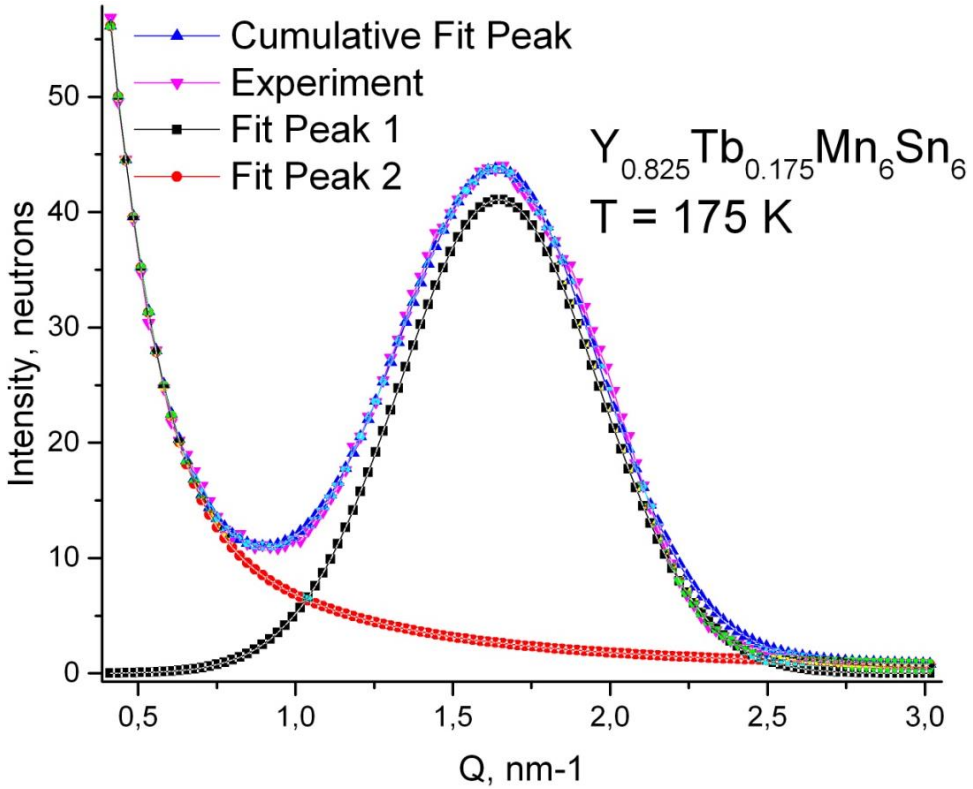


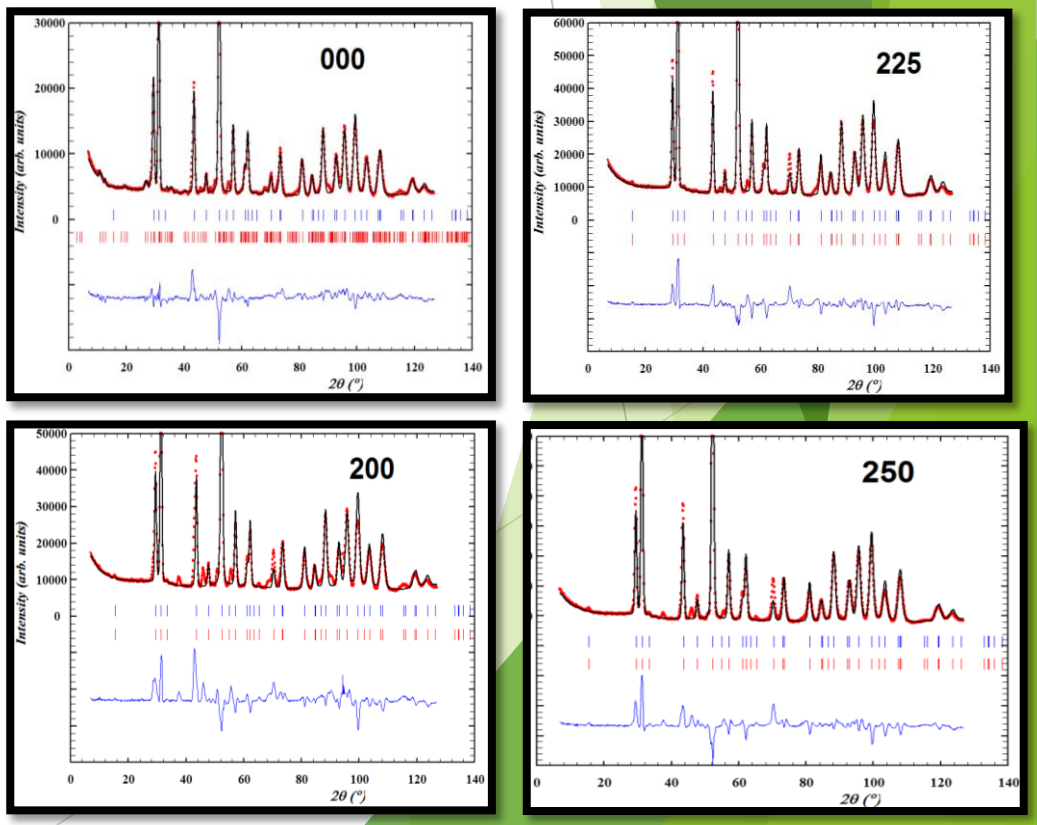
[Venturini, 1996]

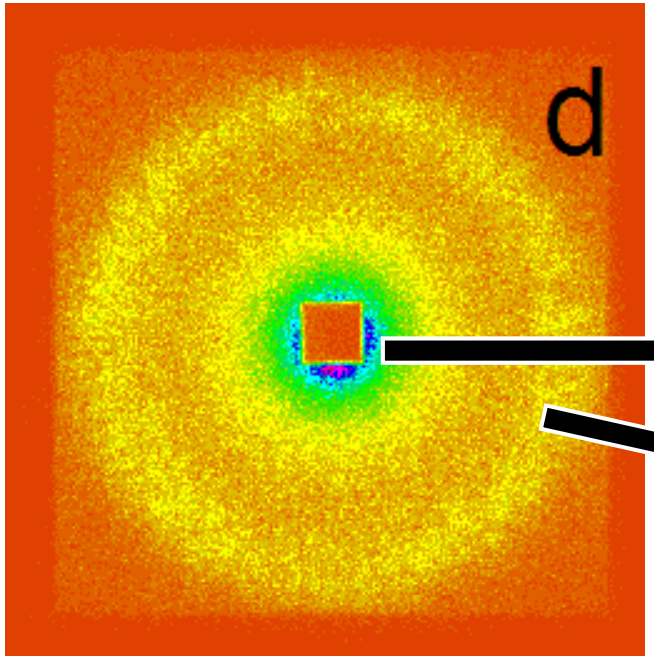
Обработка SANS данных

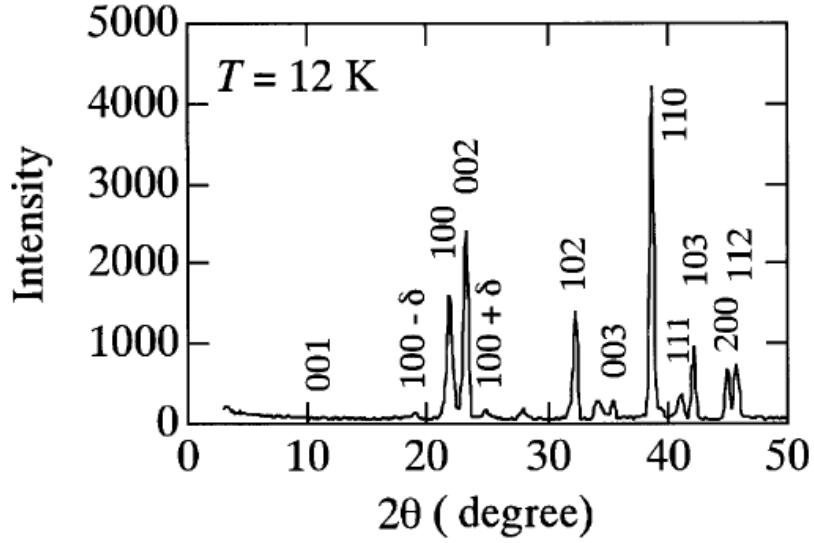


T = 25, 250, 290, 300, 340, 360 K.



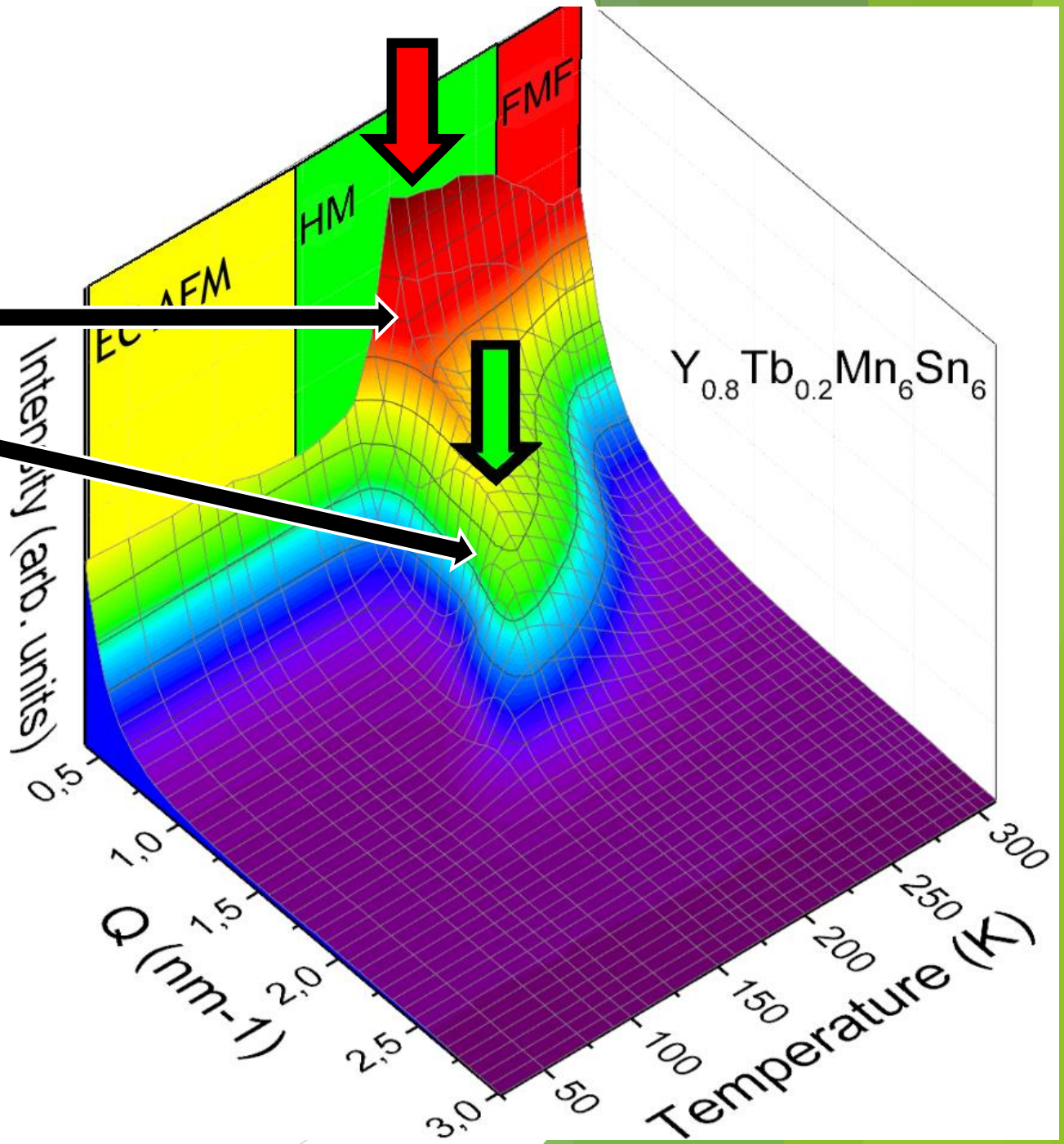




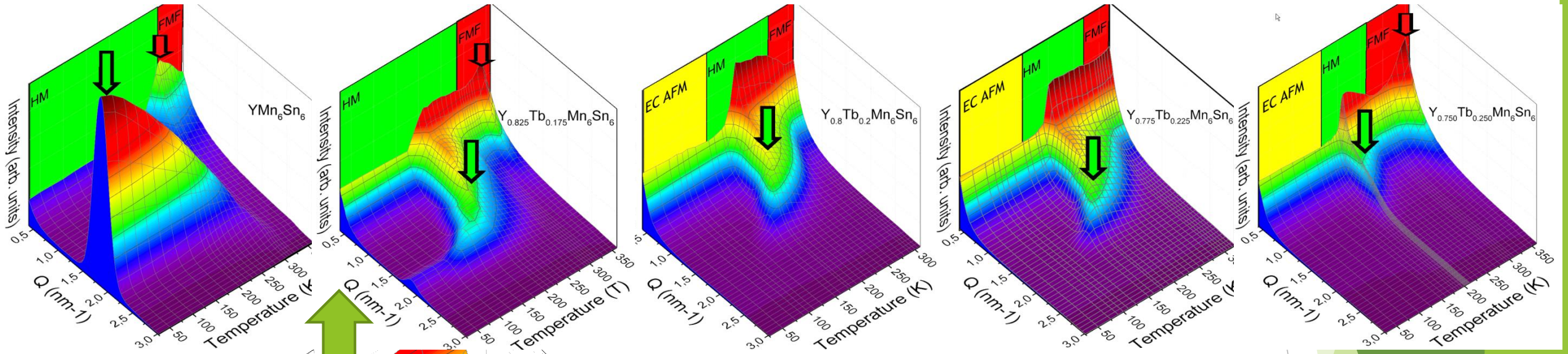


leutron diffraction patterns for $Y_{0.8}Tb_{0.2}Mn_6Sn_6$

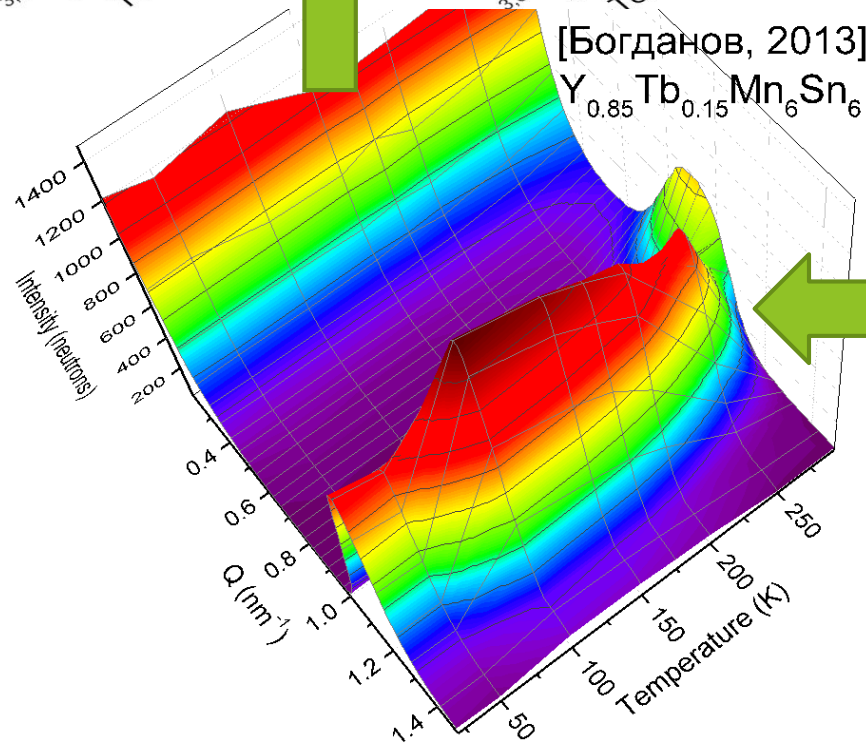
[Shigeno, 2001]

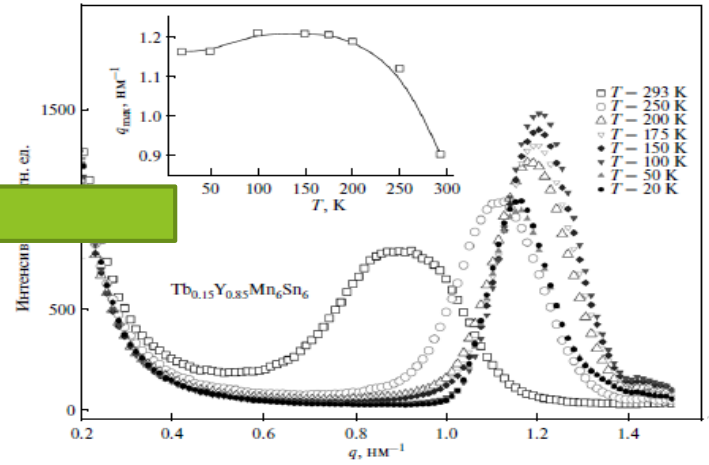


Поверхность переданный импульс - интенсивность – температура концентрация



[Богданов, 2013]
$Y_{0.85}Tb_{0.15}Mn_6Sn_6$

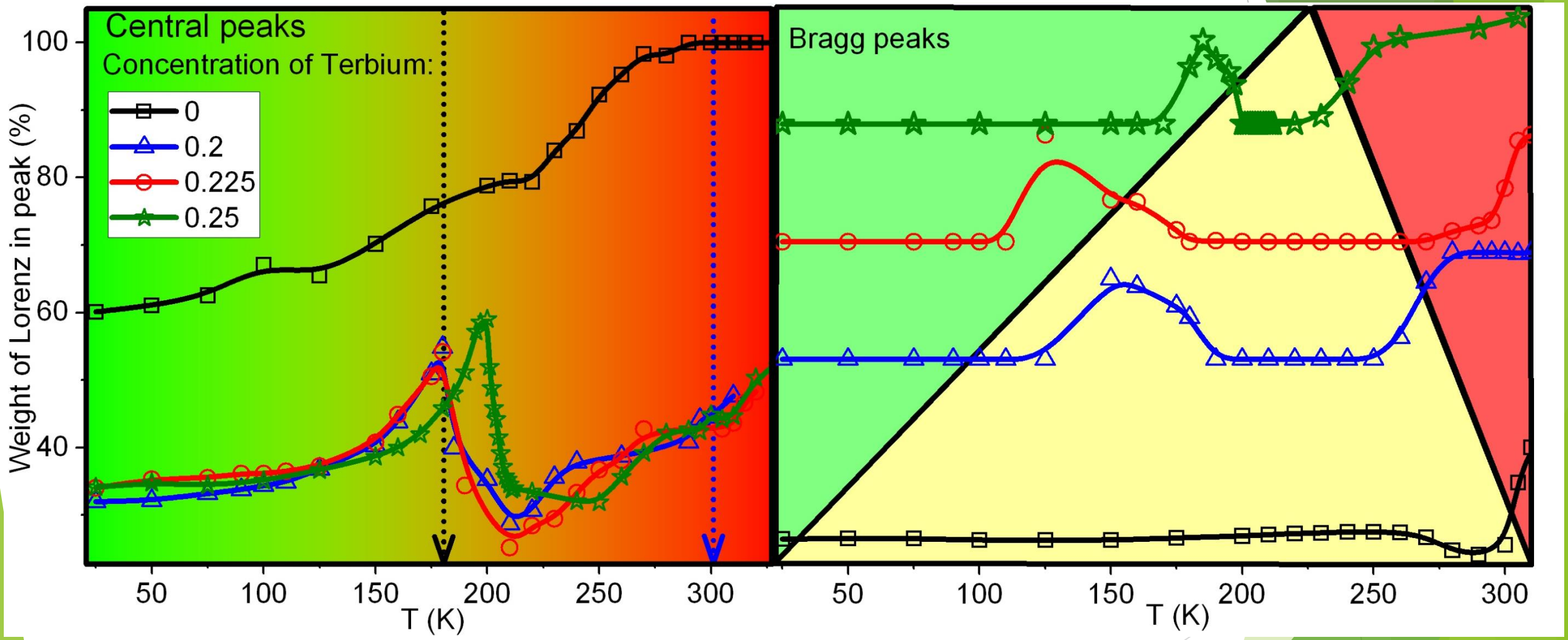




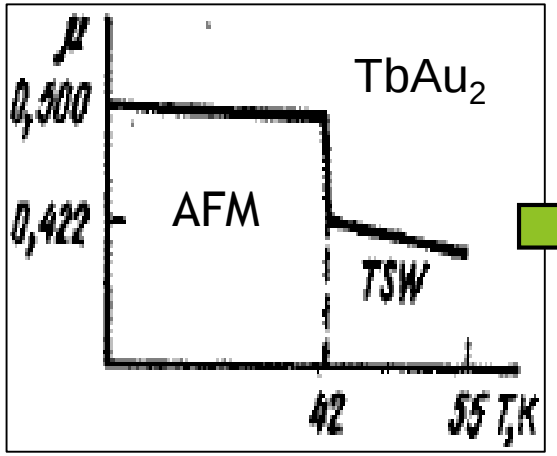
оугловые дифрактограммы соединения $Tb_{0.15}Y_{0.85}Mn_6Sn_6$ при температурах 20–293 К (Установка

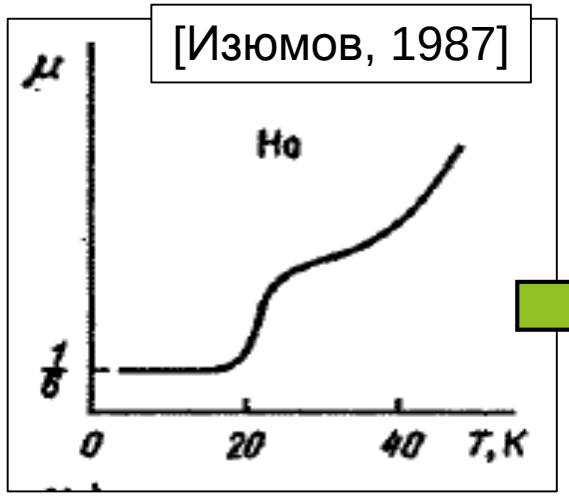
Концентрация Tb

Температурный переход в фазу ферромагнитных флуктуаций.



Поведение вектора магнитной спирали





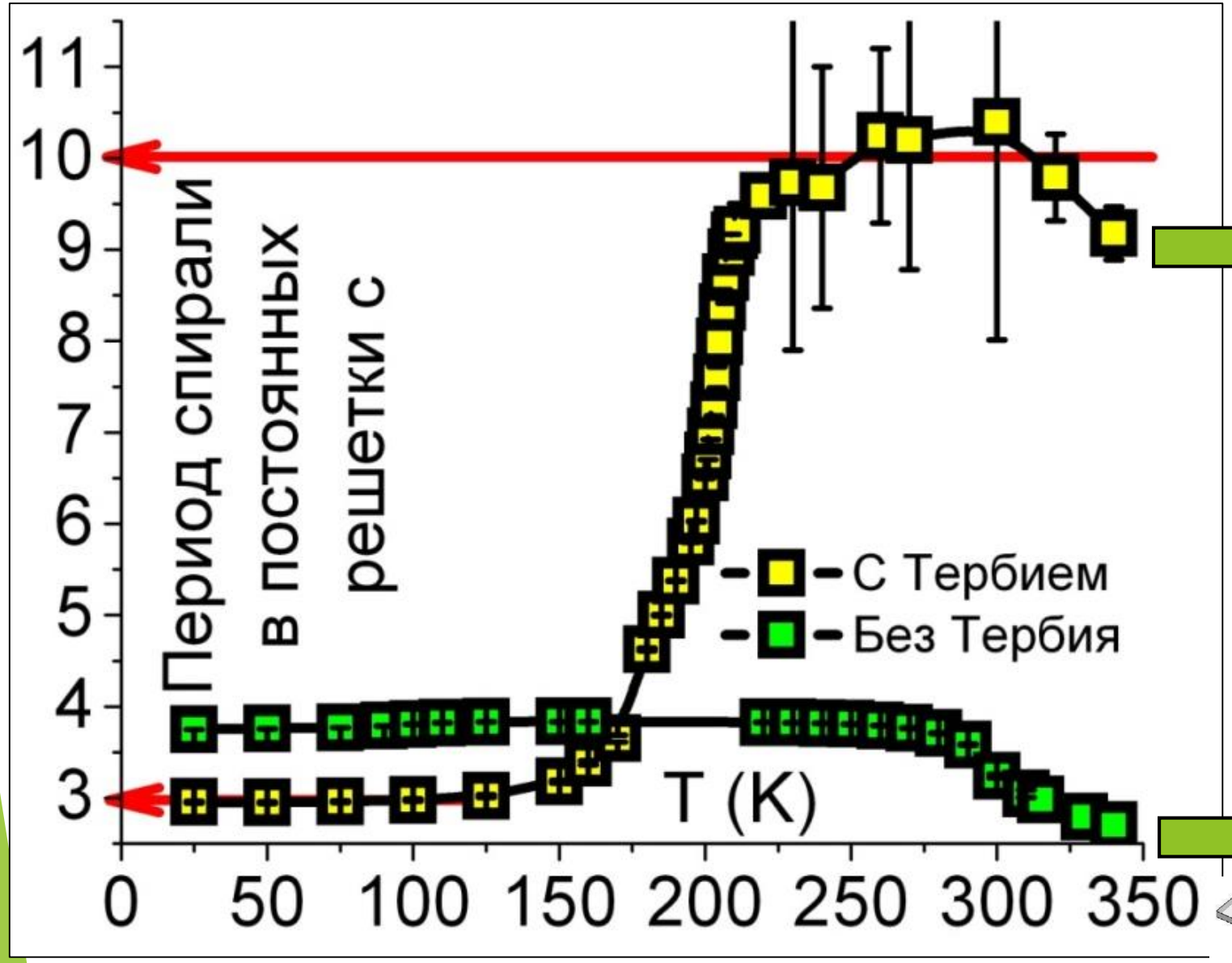
Concentration of Terbium:
0.25
0.225
0.2
0.175
0

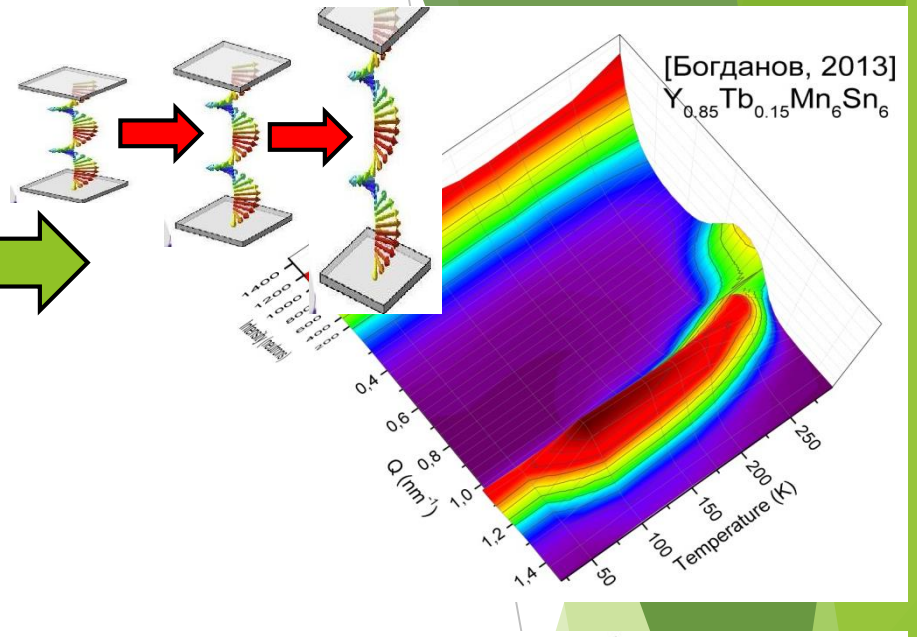
Постоянная решетки c
Концентрация Tb

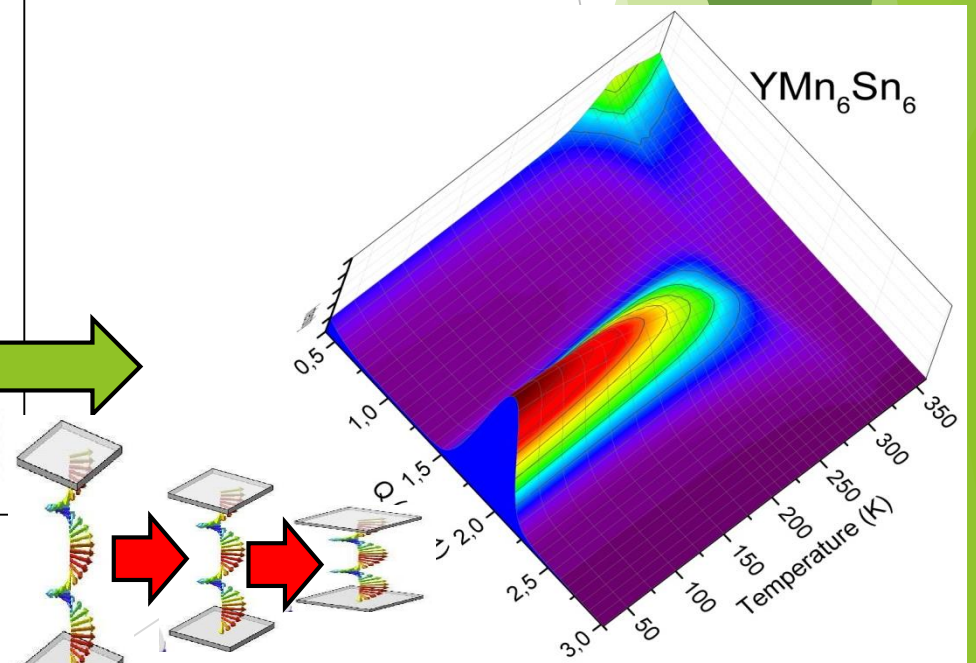
Bragg peak position (nm-1)

T (K)

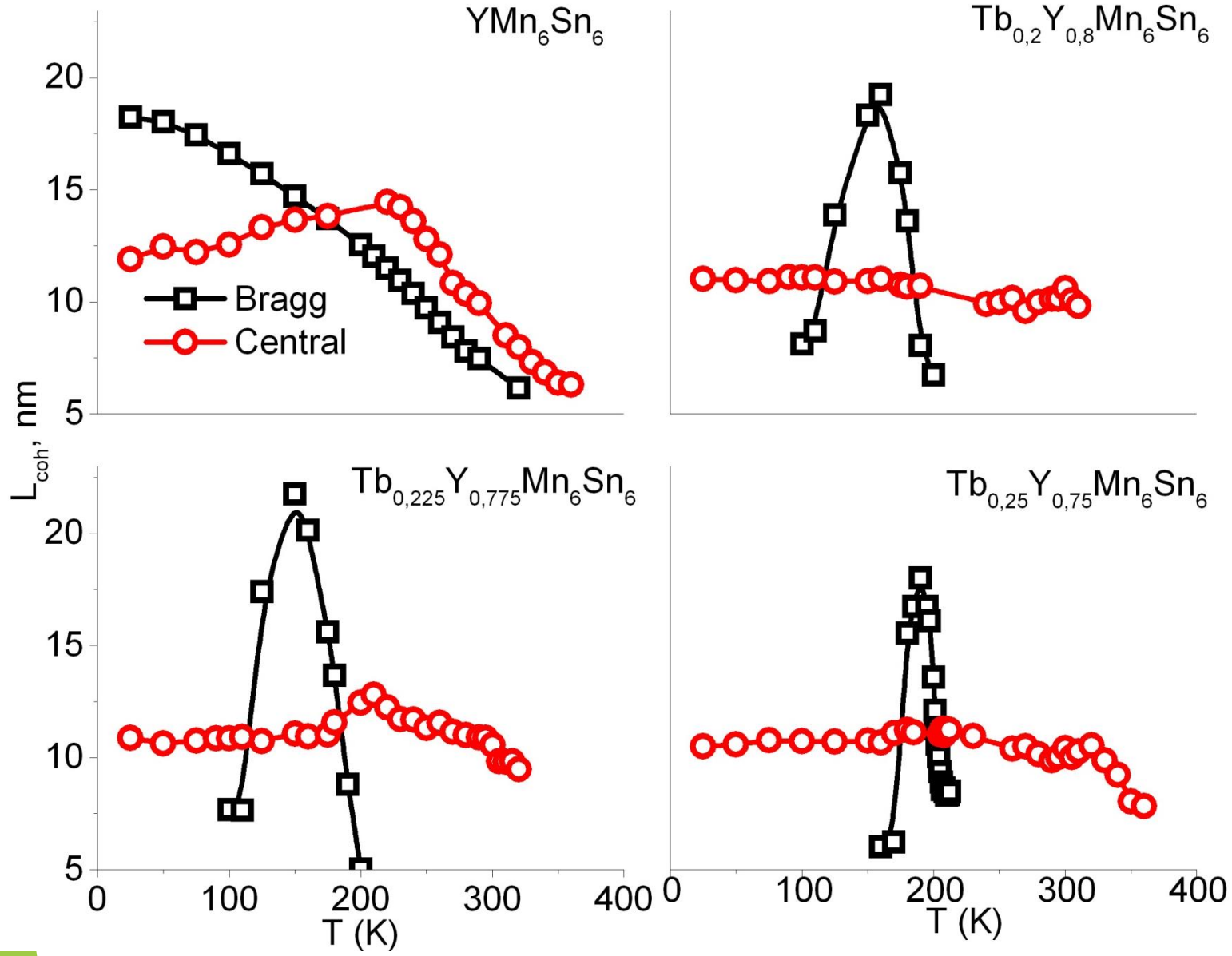
Пришпиливание магнитной спирали

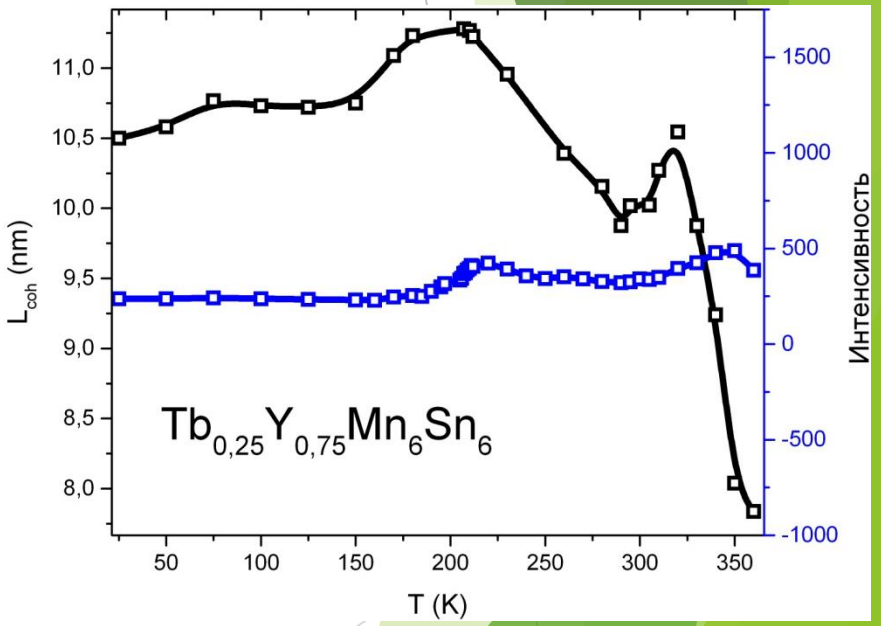




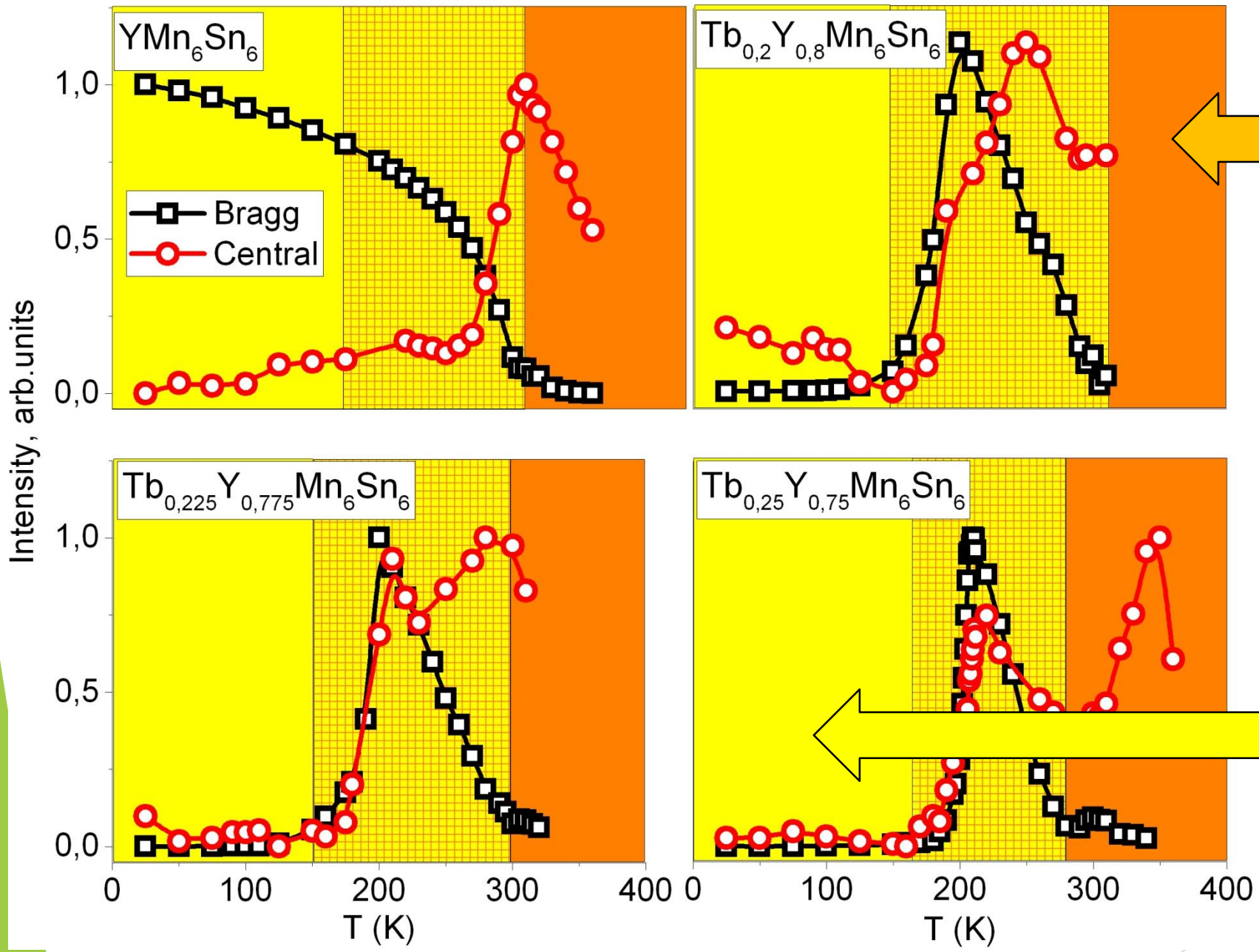


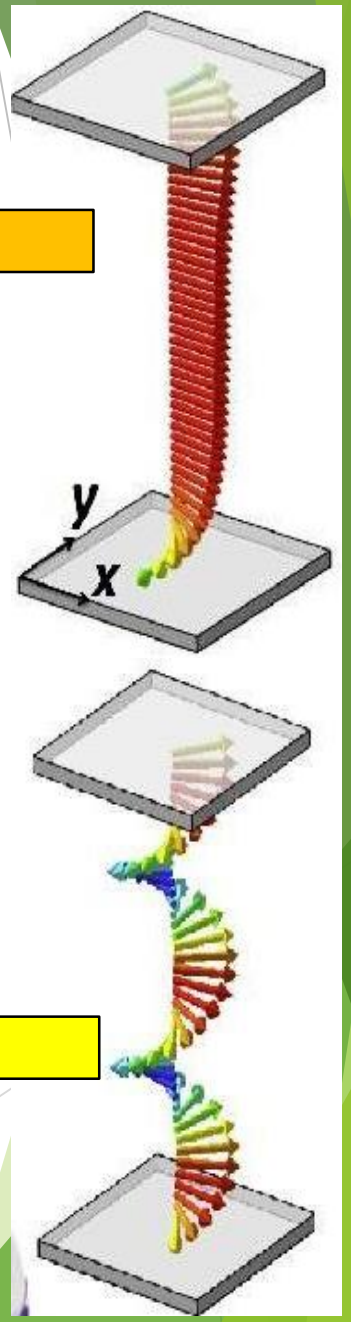
Длинны когерентности.



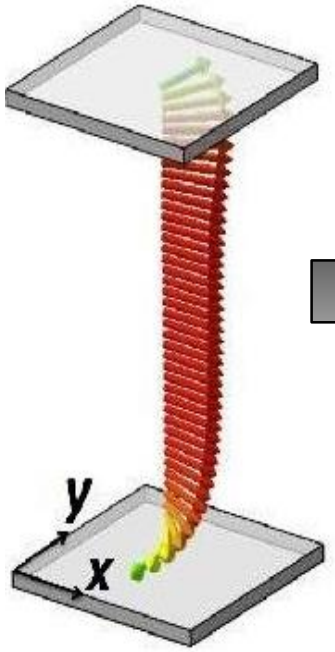


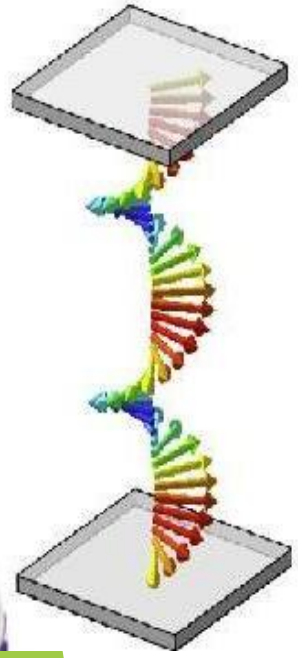
Интенсивности Пиков

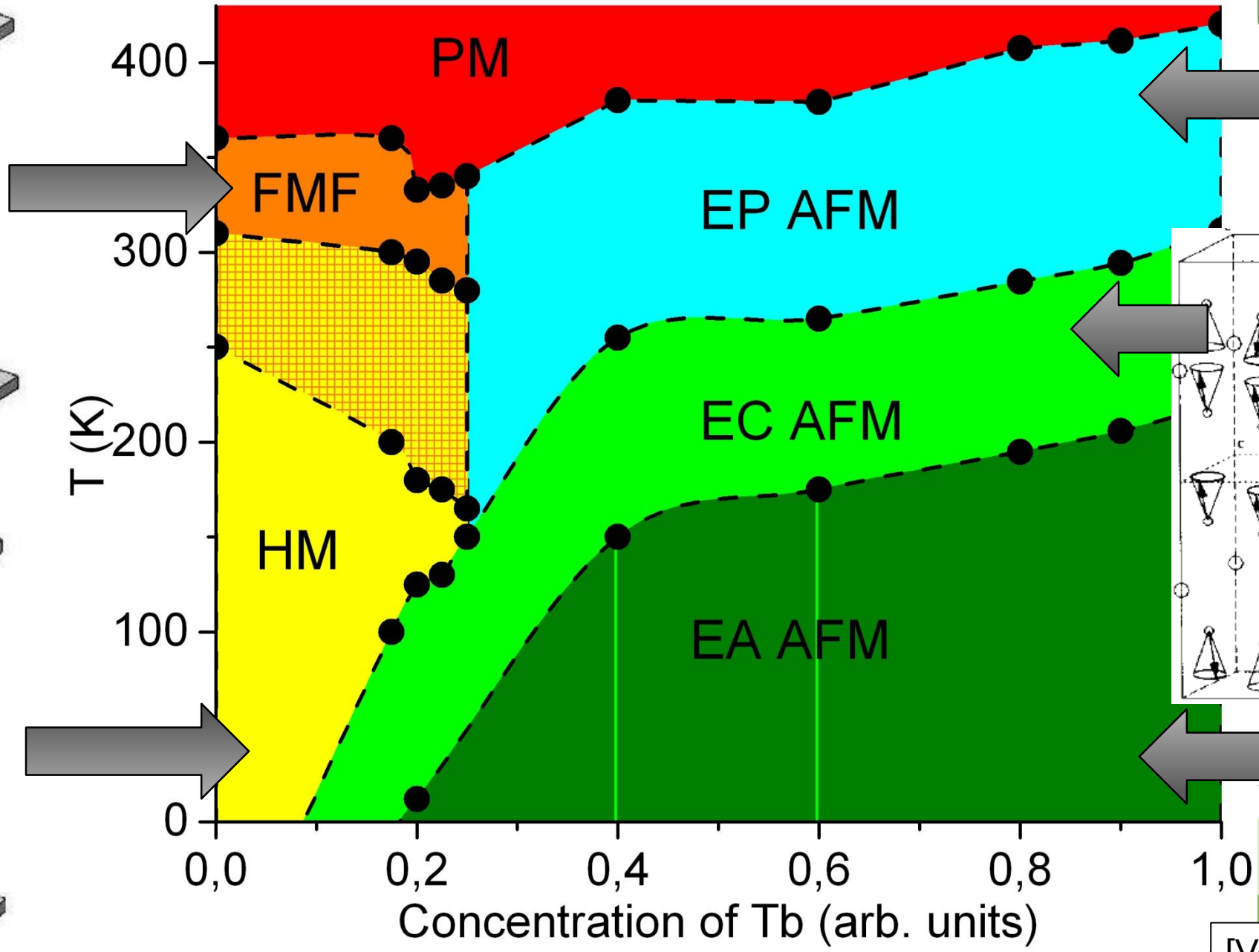


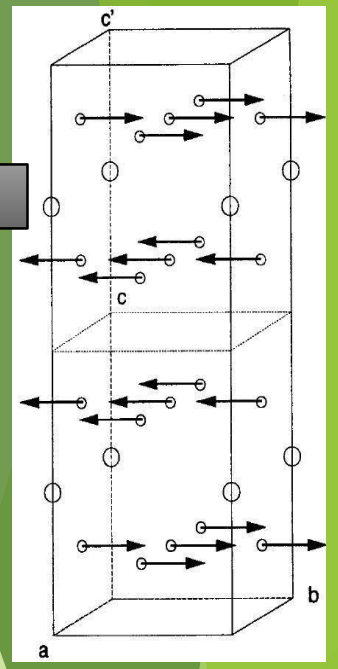


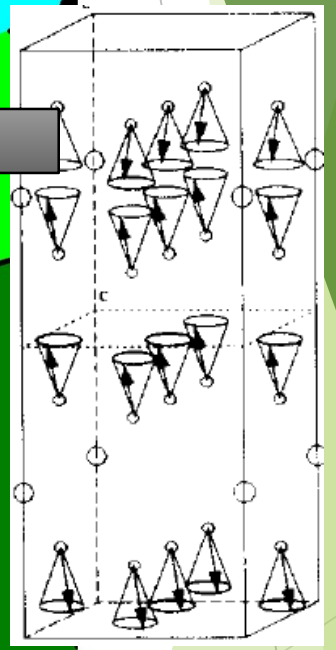
Phase diagram $Y_{1-x}Tb_xMn_6Sn_6$

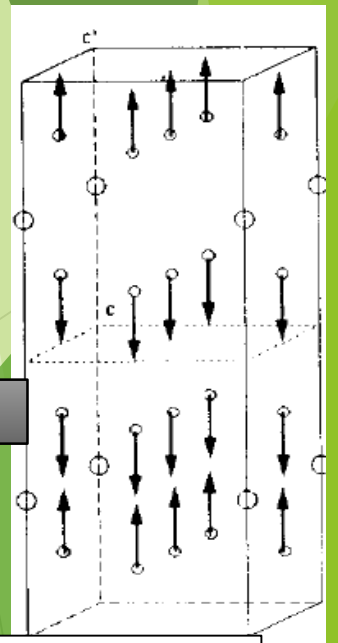












[Shigeno, 2001] [Zajkov, 2004]

[Venturini, 1993, 1996]

Выводы

1. Методом МУРН исследованы составы $Y_{1-x}Tb_xMn_6Sn_6$
2. Обнаружен концентрационный переход в несоразмерную фазу при $x_{Tb}<0,25$.
3. Обнаружен температурный переход в фазу ферромагнитных флуктуаций.
4. Построена фазовая диаграмма составов.

Спасибо за внимание

Быков А.А., redi87@bk.ru