A discovery of high temperature superconductors based on iron pnictides and chalcogenides generated enormous scientific activity concerned with relations between magnetism and superconductivity. In particular these materials could be used to test for other bosonic fields than phonons responsible for coupling of the Cooper pairs i.e. some magnons or spin fluctuations. The $^{57}$Fe Mössbauer spectroscopy (MS) was found very useful to study magnetic order in these compounds, as iron is the major component of them. The fundamental question is about iron magnetic moment in the superconducting state. High magnetic field MS at low temperature revealed no magnetic moment in superconducting FeSe [1].

Another question is concerned with the character of magnetism in the parent compounds. MS is particularly sensitive to the shape of incommensurate spin density wave (SDW). SDW of the unconventional shape evolving with temperature was found in parent compounds AFe$_2$As$_2$ (A=Ca, Ba, Eu). Magnetism in these compounds follows (1, 2) universality class i.e. Ising model restricted to the two dimensions in the real space [2]. Doping of the parent compounds leads to the gradual suppression of SDW with the emerging superconductivity. Filamentary superconducting regions are free of the 3d magnetic moments. On the other hand, Eu orders magnetically in both kinds of regions as found by $^{151}$Eu MS. Hence, 4f magnetic order coexists with superconductivity in EuFe$_2$Co$_x$As$_2$ and transferred hyperfine field from Eu is seen on iron. Eu magnetic moments reorient with the increasing Co-content [3]. SDW is sensitive to interstitial localized 3d magnetic moments as observed in Fe$_{1+y}$Te. The shape of SDW varies with the concentration of interstitial high-spin iron. Localized iron moments prevent superconductivity and interstitial iron must be removed by doping and/or deintercalation to get superconductivity [4].

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