SPIN-DENSITY STRUCTURE IN THE PRESURFACE ZONE OF CHROMIUM

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9.7 cm

According to calculations magnetic properties of chromium on its surface are different than in the bulk. In particular, the magnetic moment is enhanced by a factor of 4-5. To verify these predictions, two single-crystal Cr samples were prepared. Sample A was doped with ^{119}Sn ions by diffusion, and sample B by implantation. In the latter case, the mean projected range of the ions was 15.6 nm. ^{119}Sn Mössbauer spectra recorded at RT in a transmission (A) and in the CEMS mode (A and B) revealed a strong enhancement of the hf field, H, for B. Both the average value of H and its maximum value were larger by a factor of 2.5 than the corresponding figures for A. This means the spin-density in the presurface zone of bulk Cr is strongly enhanced. The other finding being in a strong disagreement with the predictions is the depth of the effect. According to our measurements it amounts to at least 110 monolayers which is 30 - 50 times more than predicted. An explanation of the effect in terms of interference or higher-order harmonics will be given.

13.4 cm

Subject category :

2. Magnetic Films, Surfaces and Multilayers

Presentation mode :
oral

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