

Abstract Submitted  
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**Enhancement of the Co magnetic moment in bcc  $\text{Co}_{1-x}\text{Mn}_x$  on  $\text{MgO}$** <sup>1</sup> RYAN SNOW, HARSH BHATKAR, Montana State University, ALPHA N'DIAYE, ELKE ARENHOLZ, Lawrence Berkeley National Laboratories, YVES IDZERDA, Montana State University, MONTANA STATE UNIVERSITY TEAM, LAWRENCE BERKELEY NATIONAL LABORATORIES TEAM — Using X-ray absorption spectroscopy (XAS) and X-ray magnetic circular dichroism (MCD), we show that the elemental Co moment for MBE grown thin films of bcc  $\text{Co}_{1-x}\text{Mn}_x$  grown on  $\text{MgO}(001)$  is enhanced by 40% to a maximum value of  $2.1 \mu_B$  at  $x=0.24$ . The net Mn moment is found to align parallel with Co for all concentrations and remains roughly constant until  $x=0.3$ , then drops steadily, up to  $x=0.7$ , where the total moment of the film abruptly collapses to zero. Using a low-concentration Mn moment of  $3.0 \mu_B$ , the average magnetization lies directly on the Slater-Pauling (SP) curve for concentrations up to about  $x=.25$ , where it reaches a maximum moment of  $2.3 \mu_B$  /atom. This peak is slightly shifted and the slope is steeper on the high-Mn concentration side of the peak relative to the standard SP curve. This is in stark contrast to the fcc CoMn and hcp CoCr bulk behavior which shows only a rapid total moment reduction with Mn concentration.

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Yves Idzerda  
Montana State University

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