

SURFACE GRATING LIKE ROUGHNESS OF Nb/MgO THIN FILMS STUDIED BY NON-SPECULAR X-RAY REFLECTIVITY

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Non specular X-ray reflectivity measurements were achieved on Nb (110) epitaxial thin films grown on MgO (001) by Molecular Beam Epitaxy (MBE). X ray diffuse pattern were recorded with a 2D gas filled detector under complete vacuum (ID01 ESRF beamline). The measurements showed up surface roughness scattering properties which are usually characteristic of a surface grating :

- up to two satellites orders in the $Q_{//}$ direction showing a strong in plane correlation between the scattering entities.
- up to three oscillations observed along the Q_z direction.
- a strong anisotropy in the diffuse pattern recorded at different azimuth angles.

The agreement, but also the complementarity of these observations with those obtained by other techniques, in particular Atomic Force Microscopy (AFM), will be discussed here. Finally X-ray diffuse scattering calculations, which are currently being done, will be presented.