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Internal Strain Measurements using PDF Analysis. B. Clausen¹, Th. Proffen¹, E. Üstündag^{2,1} Lujan Center, Los Alamos National Laboratory, NM 87545, USA, ²Dept. of Mat. Sci. and Eng., Iowa State Univ., Ames, IA 50011, USA

Today, routine measurements of internal and residual strains in crystalline materials are performed using neutron and synchrotron X-ray based diffraction methods. The diffraction technique has proven invaluable for validating constitutive models for polycrystalline materials. Recently, the approach has been extended to bulk metallic glasses, and preliminary results show that changes in the position of the “*first sharp diffraction peak*” in $S(Q)$ and nearest-neighbor peaks in $G(r)$ correlate well with the macroscopic strain in uniaxial loading tests. However, it is clear that rigorous structure refinement is required for quantitative strain determination based upon pair distribution function analysis.