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[111] Electric Field Enhancement of Polar Nano-Regions in a Ferroelectric Relaxor GUANGYONG XU, Brookhaven National Laboratory, PETER GEHRING, NIST Center for Neutron Research, GEN SHIRANE, Brookhaven National Laboratory — The response of polar nanoregions (PNR) to a [111]-oriented electric field has been studied by measuring the effect on the diffuse scattering observed in the relaxor compound PZN-8PT. In contrast to the behavior exhibited by normal ferroelectric domains, the diffuse scattering associated with the PNR in this relaxor system is partially enhanced by cooling in the presence of a field. The effect of the field is retained by the PNR after the field is removed. Remarkably, the "memory" of the field reappears even after heating the system above Tc and cooling in zero field.

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