

Exploring hot loop plasma with hard X-rays

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In examining the impulsivity of coronal heating, a long-standing question is the degree to which apparently quiescent loops contain hot ("flare-temperature") plasma. If impulsive events heat a large number of unresolved loops, then observations should reveal a wide temperature range, including some plasma at ~ 10 MK or above. An observational view of this flare-heated plasma is beginning to emerge from a wide variety of measurements that show hints of hot plasma. Until recently, hard X-ray (HXR) observations from instruments with limited sensitivity served only to provide constraints. Now, with modern focusing HXR instruments, impulsively heated coronal plasma can be measured directly. This presentation will show measurements of active regions observed by the FOXSI sounding rockets and NuSTAR spacecraft and will discuss the consequences for impulsive heating scenarios.