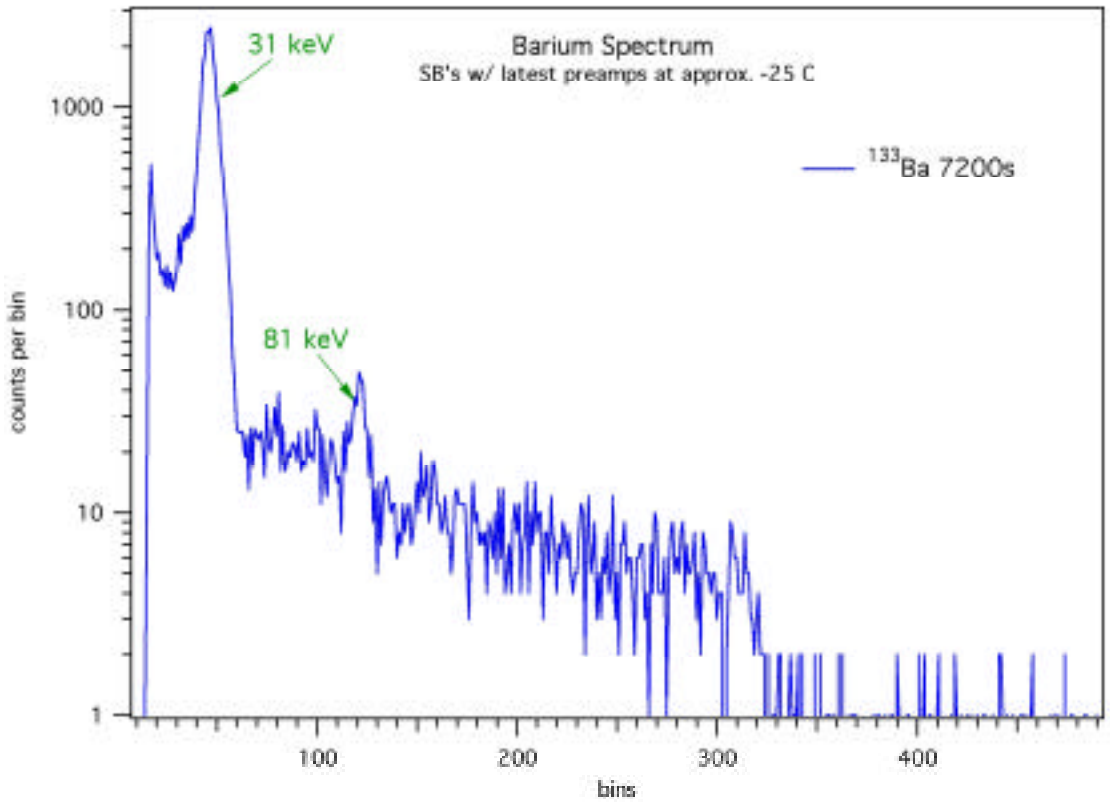
Tuesday, January 29, 2002
H.P Mumm

emiT Detector Status

Currently we have a full motherboard with five mounted detectors running in the vacuum chamber. The cooling system has proven to be robust, with no BeO failures during several cool down cycles. We are consistently reaching temperatures on the surface of the focusing plate (essentially the same at the detectors) of about –70 C. We plan to apply high voltage to the system tomorrow, and it should be possible to have all four paddles running by the beginning of next week.



The above plot shows a recent Barium spectrum taken with the new electronics and a surface barrier detector. The width of the 31 keV peak is about 7 keV. While this isn't as good as one would hope for, it's clear that the peak is well separated from the background. (The counts in the valley between the peak and the noise wall are actually from the source).

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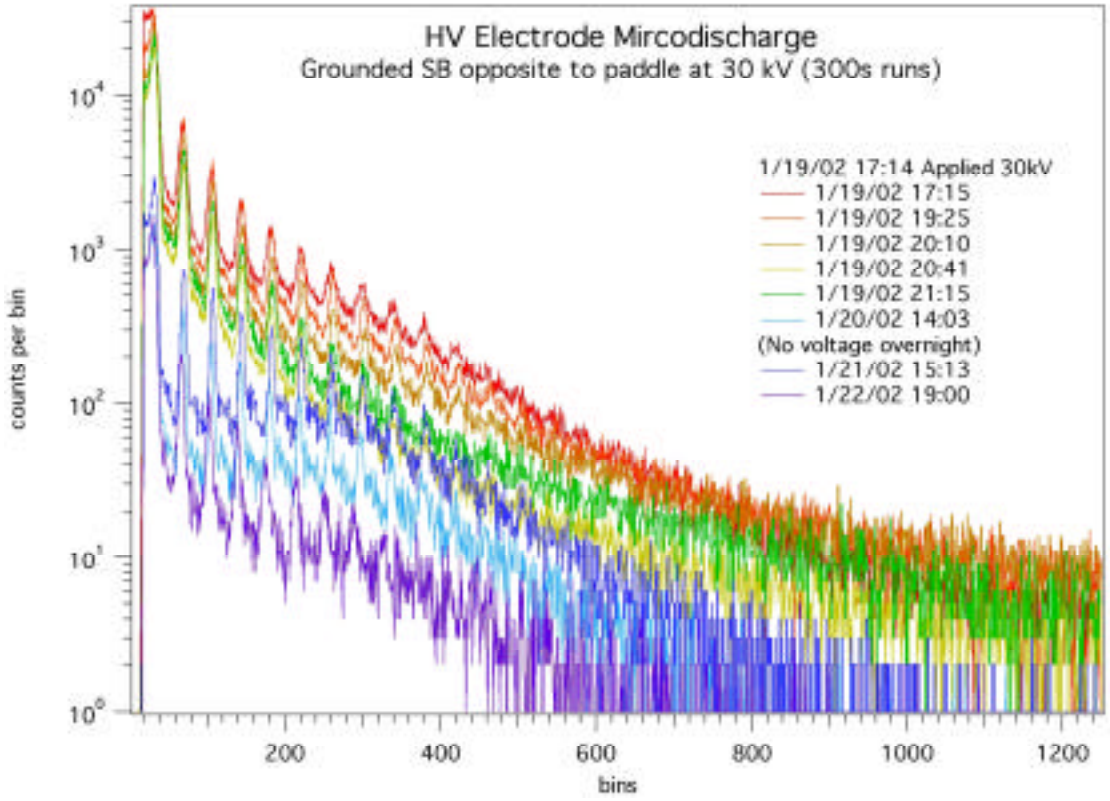

This plot shows electron bursts from a paddle across the chamber from the one in which the detector is mounted. These are the guys that caused our background problems last time. I haven't looked for protons yet, perhaps I will do so tomorrow, however the observed electron rate clearly falls quickly with time. This is a paddle that was fresh off the bench, with no previous conditioning. I should also mention that this paddle was raised to 40-45 kV between the first few runs. This didn't seem to help much but it also didn't cause the paddle to break down. Overall the system seems much more stable than last time.