Particle Detector Waveforms for Shots 17006 and 117017

T. Tsang
BNL
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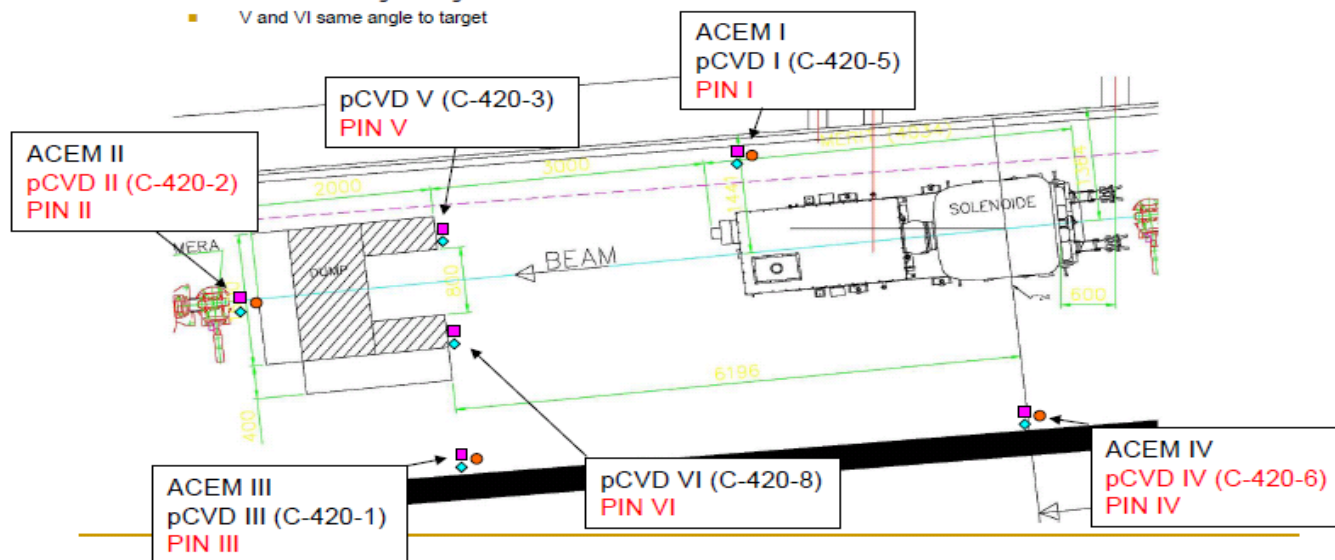
There are a total of 6 diamond particle detectors positioned but only 4 are good (I, III, V, & VI), according to Marcus. Detector III (left 20°) is the one we've been using for comparison with scintillating fiber and BCT.

Detector positions

- 8 active detectors
- 6 positions
  - Measure symmetry in secondary particle flux:
    - I and III same angle to target
    - V and VI same angle to target

- ● ACEM: 4/4
- ■ pCVD: 4/6
- ◆ PIN: 0/6

Connected
Not Connected

pCVD V (C-420-3)
PIN V

ACEM I
pCVD I (C-420-5)
PIN I

ACEM II
pCVD II (C-420-2)
PIN II

ACEM III
pCVD III (C-420-1)
PIN III

pCVD VI (C-420-8)
PIN VI

ACEM IV
pCVD IV (C-420-6)
PIN IV

BEAM

SOLENOIDE

Present channel configuration

Detector	Osc. Channel	Sampling Speed [MS/s]	Power Supply CH	Voltage [V]	Attenuation [dB] (no Hg)
pCVD I	LeCroy, CH1	2500	PS3, CH1	500	20
pCVD II	-	-	-	-	-
pCVD III	LeCroy, CH2	2500	PS3, CH2	500	20
pCVD IV	-	-	-	-	-
pCVD V	LeCroy, CH3	2500	PS3, CH3	500	30
pCVD VI	LeCroy, CH4	2500	PS3, CH4	500	30
ACEM I	TEK, CH1	500	PS2, CH1	?	0
ACEM II	TEK, CH2	500	PS2, CH2	?	0
ACEM III	TEK, CH3(*)	500	PS2, CH3	?	0
ACEM IV	TEK, CH4	500	PS2, CH4	?	0
PIN <i>	-	-	-	60	-

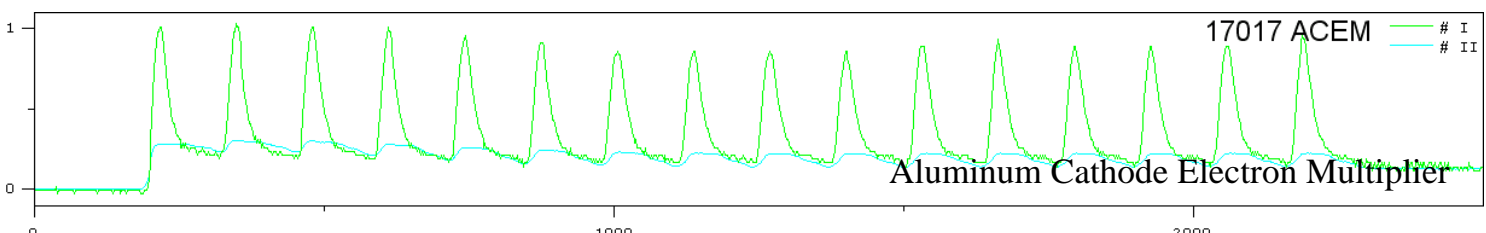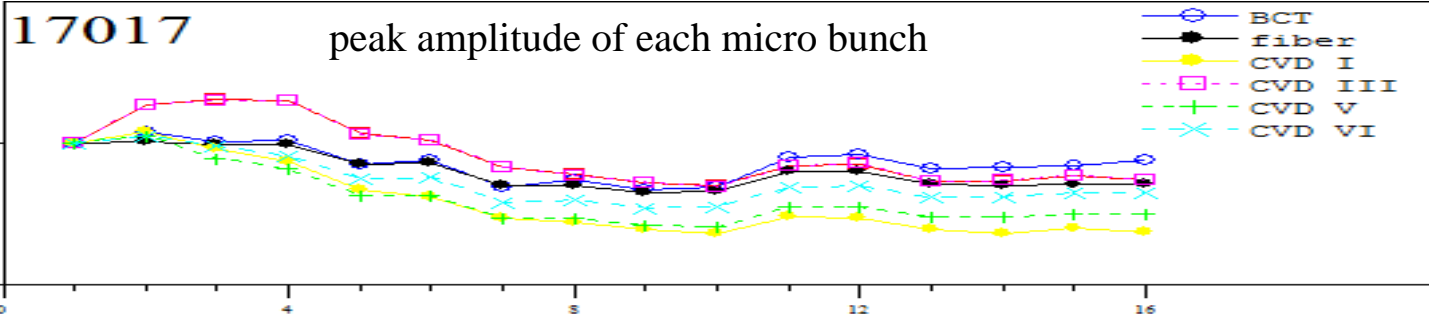- (*) Malfunctioning of the Tektronix restricts the voltage resolution on this channel to be at least 300 mV/div.

Other diamond particle detectors (e.g. channel VI) are better correlated with BCT & fiber data,

shot # 17017

calculated correlation
of peak height

P&S 0.93 (ch III), 0.98 (ch VI)
P&T 0.78 (ch III), 0.91 (ch VI)
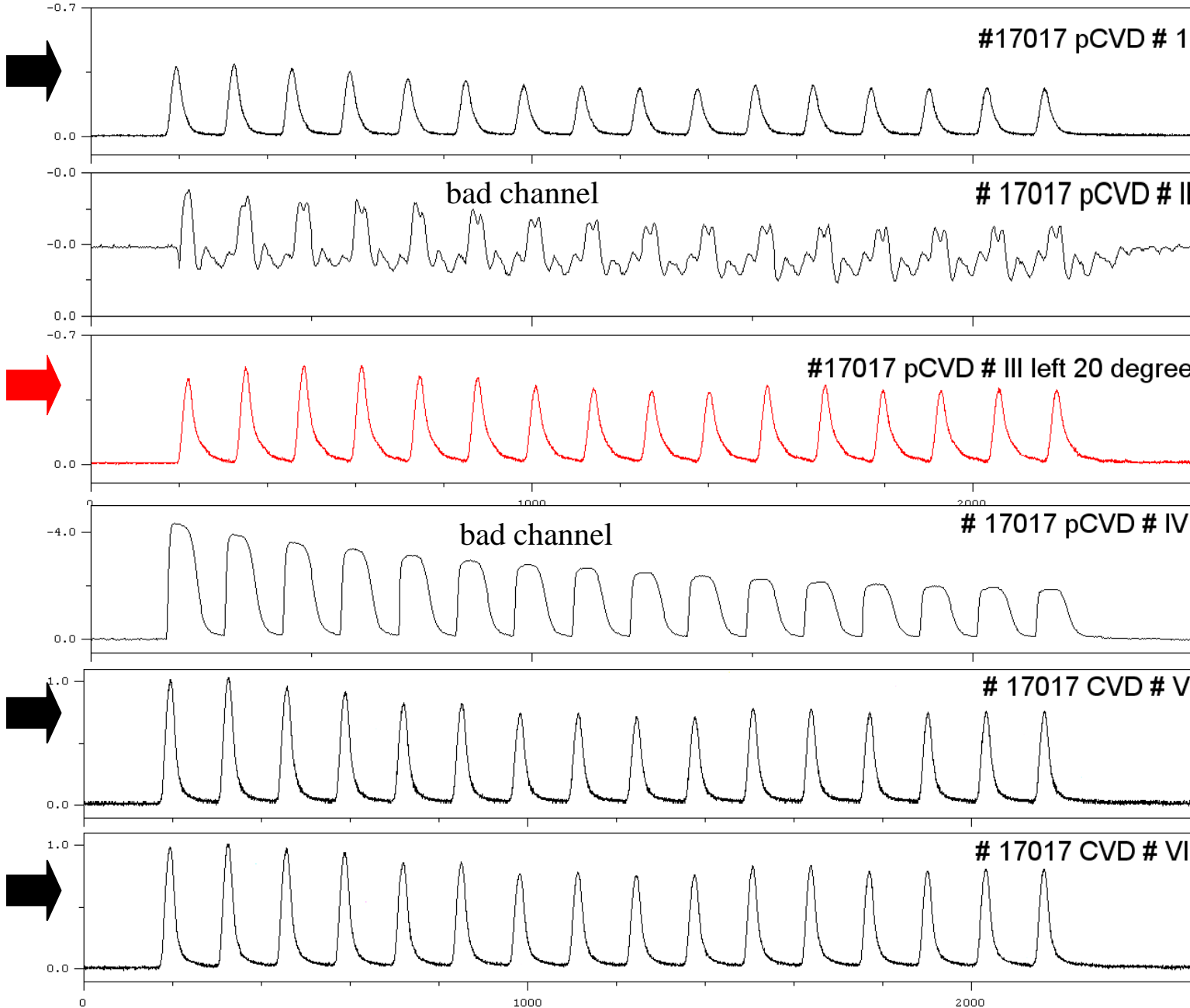

peak amplitude of each micro bunch

17017

Other diamond particle detectors (e.g. channel VI) are better correlated with BCT & fiber data,

shot # 17006

calculated correlation of peak height

P&S 0.47 (ch III), 0.93 (ch VI)
P&T 0.24 (ch III), 0.84 (ch VI)

17006 pCVD # I

17006 pCVD # II

bad channel

17006 pCVD # III

17006 pCVD # IV

bad channel

#17006 CVD # V

#17006 CVD # VI

17006 — peak amplitude of each micro bunch

- BCT
- fiber
- CVD I
- CVD III
- CVD V
- CVD VI

17006 ACEM

Aluminum Cathode Electron Multiplier