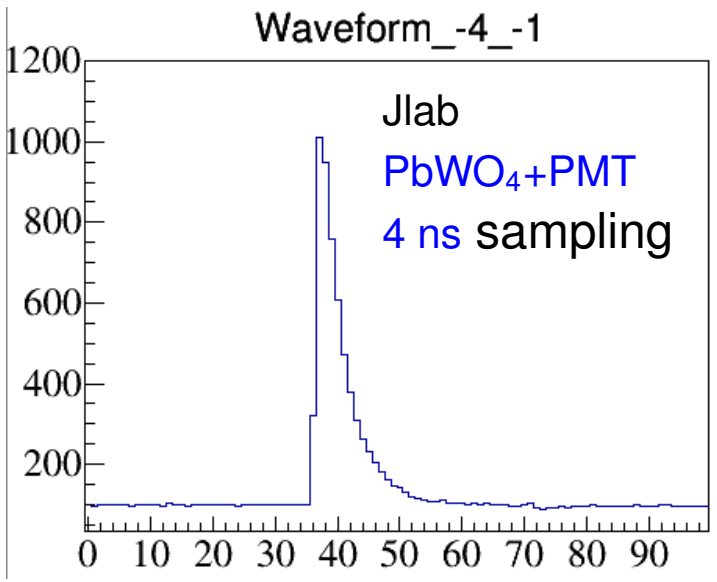
EIC Calorimeters and Electronics

Tentative choice of detector technologies
ECAL: assumes granularity 20 $\times$ 20 mm and 25 $\times$ 25 mm

Arm	type	tech	Photo sensor	pulse length	# chann	$\sigma E/E$
e	ECAL	$PbWO_4$	SiPM	<60 ns	7700	$2\%/\sqrt{E} \oplus 1\%$
e	ECAL	W+Sc Shash.	SiPM	<60 ns	38000	$7\%/\sqrt{E} \oplus 1\%$
b	ECAL	W/ScFi	SiPM	<60 ns	41000	$12\%/\sqrt{E} \oplus 2\%$
h	ECAL	W/ScFi	SiPM	<60 ns	42000	$12\%/\sqrt{E} \oplus 2\%$
e,h	HCAL	Fe/Sc	SiPM	<60 ns	2×3800	$50\%/\sqrt{E} \oplus 6\%$
b	HCAL	Fe/Sc	SiPM	<60 ns	7500	$100\%/\sqrt{E} \oplus 15\%$

- Typical signals $<$ 1 V
- Dynamic range $\geq$ 12 bits



Example of readout (JLab):

- FADC-250 MHz 12 bits, 16 channels/VME slot
- 3 μs buffer
- FPGA processing of waveforms: zero suppression, pulse integral, max amplitude, timing ($<$ 1 ns) $\Rightarrow$ readout
- VXS: for L1 trigger or for streaming readout