Two additional questions about prototyping:
- Is there a physical prototype already available (how you read it out, etc. Or when is it planned)

There are some prototypes that have been tested in Hall D at JLab. Tanja has been leading this effort and can provide more details.

- Do you already have a waveform from the SiPM output available (picture or data)

I attach a picture for single p.e. signals for the SiPMs that we anticipate to use.

SiPM information/requirements (not exactly ASIC-related, but good information to have):
- manufacturer

Hamamatsu

- size [mm] (individual chip)

6x6 mm2

- bias range (min & max that need to be set) [V]

40-46 V

- operating overvoltage (planned) [V]

~ 5V

- stability required [mV]

TBD

- bias voltage accuracy (IF NEEDED, for using pre-calibration voltages) [%]

TBD (~ mV)

- bias voltage current (max, after lifetime irradiation) [uA]

TBD

- bias voltage temperature compensation (or will SiPM temperature be controlled instead)?

Bias voltage temperature compensation would be preferred

- array of SiPM/channel [how many; series/parallel scheme]

4 SiPM per crystal; series/parallel scheme TBD

- capacitance/channel

2.5 nF/channel (4 channels per crystal)

- #pixel/channel

160-360k

- dynamic range required/channel [pC]
(minimum signal important to detect is discussed below (Hit requirements))

~10-10000 pC/channel

FEB signal processing requirements:
(Preamp information)
- linearity requirement [max nonlinearity % over full range, or a more detailed spec]

Non-linearity must be corrected to better than 0.5%

- gain stability (w.r.t. time/drift, internal noises of the FEB, FEB temperature, external interferences) [%]

<0.5%

- peak time (or max peak time to avoid pile-up) [ns]

~ 20 ns

- charge resolution [% of full scale or a more detailed spec, e.g. % of signal at various signal sizes]

TBD, but most likely 10-bits should be enough

- Time-of-hit resolution [ns]

~ 5 ns

- double-pulse resolving time [ns] (i.e. readout of two pulses separated by less than this **may have pileup errors or may be seen as one pulse**)

~ 10 ns

Hit processing / streaming readout requirements:
- Hit threshold [pC] (OR a more detailed spec over detector geometry if appropriate)

~ 10 pC

- Hits defined by something more than each channel independently? (Default answer "no")

No

- Hit rate (physics+background) per channel maximum [kHz] (OR a more detailed spec over detector geometry if appropriate)

TBD

- Does the hit rate requirement apply independently to all channels or has to be understood with some correlation in mind?

Slow control:
- SiPM bias current monitoring [Yes / combined / none]

Yes

- temperature monitoring [Yes/No]

Yes

Accessibility of the FEB and RDO:
- FEB on detector [Yes/No]

Yes

- FEB accessibility [During run/between runs] (Radiation tolerance)

Between runs

- FEB-RDO minimum distance [m]

~ 3-5 m ??

- RDO on detector [Yes/No] (default No)

No

- RDO accessibility/location (Radiation tolerance)
TBD