

Very preliminary dRICH cost estimation

- **The following table shows very preliminary (and likely incomplete) estimation!**
- Not yet adequately discussed within the dRICH collaborators (due mainly to vacation period)
- Probably the most reliable figures are relative to the procurement of material for the dRICH production which have been largely derived from (2019-2020) vendor quotations for CLAS12-RICH; quantities need to be scaled from original JLEIC option to ATHENA configuration; naively a factor around ~ 0.8

dRICH cost estimation

Project/Inkind costs assignment is somehow arbitrary yet

Activity Description (Separate between conceptual design, preliminary design, final design, long lead procurements etc.)	Activity Type (Pull Down)	% of cost Inkind	Direct Materials Total \$\$ (Calculated)	Total Labor cost \$\$ (Calculated)	Total Cost to project \$\$ (Calculated)	Total Inkind Cost \$\$ (Calculated)
dRICH R&D						
DAQ electronics development	Other	100	\$0	\$61,268	\$0	\$61,268
Photosensors tests and selection	Other	100	\$0	\$125,640	\$0	\$125,640
Radiators selection and interplay characterization	Other	100	\$0	\$47,115	\$0	\$47,115
dRICH prototyping						
Small scale prototype implementation, including simulation	In-House Assembly	100	\$50,000	\$120,683	\$0	\$170,683
prototype beam tests and analysis of the data	In-House Testing	100	\$20,000	\$120,683	\$0	\$140,683
consolidate prototype toward final design	In-House Testing	100	\$20,000	\$120,683	\$0	\$140,683
dRICH Final Design						
Software porting to chosen simulation and analysis framework	Conceptual Design	100	\$0	\$56,792	\$0	\$56,792
Finalize design with simulation and performance analysis	Conceptual Design	100	\$0	\$56,792	\$0	\$56,792
Radiators subsystems	Final Design	100	\$0	\$46,440	\$0	\$46,440
Optical components	Final Design	100	\$0	\$46,440	\$0	\$46,440
Mechanical structure	Final Design	100	\$0	\$46,440	\$0	\$46,440
Sensor ancillary components (e.g. cooling)	Final Design	100	\$0	\$46,440	\$0	\$46,440
dRICH Production (based on JLEIC)						
Sensors (SiPM)	Procurement of Material/ V	100	\$1,420,800	\$0	\$0	\$1,420,800
Electronics (power supply, services), assume time of thresho	Procurement of Material/ V	100	\$2,400,000	\$0	\$0	\$2,400,000
Aerogel Radiator	Procurement of Material/ V	100	\$400,000	\$0	\$0	\$400,000
Gas (with 0.2 M\$ for recollection system), assume C2F6	Procurement of Material/ V	100	\$300,000	\$0	\$0	\$300,000
Mirrors (with coating and alignment system), fiber reinforced	Procurement of Material/ V	100	\$960,000	\$0	\$0	\$960,000
Mechanics (with aerogel, mirror and readout supports), fiber	Procurement of Material/ V	100	\$1,000,000	\$0	\$0	\$1,000,000
			\$6,570,800	\$895,416		

Very preliminary

30/Aug/2021