



Muon g-2 Cryogenics

*Fermi National Accelerator Laboratory
Cryogenic Department*

Assumptions

- The experiment is located just downstream of the AP0 service building
- The Tevatron accelerator complex is in 80K standby mode
- Tevatron F2 house is allowed to be warmed-up to room temperature
- No cooldown constraints are imposed on either the helium or nitrogen circuits
- 1,000 liter LHe control dewar and instrumentation is supplied by the experiment
- Load cooldown system and safety relief devices are provided by the experiment
- ACNET controls system will be used
- Experiment supplied load controls are capable of communicating with ACNET
- Cryogenic components and controls of the load are excluded from the scope of this conceptual design
- Cryogenic system scope stops at the bayonet can which will be located in the experimental building.



Muon g-2 Cryogenic Costs

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Cryogenic Department

			g-2 cryogenics						
Identifier	Item description	basis	Unit	Material			Labor		
				No. of units	FY08 \$k per unit	Total M&S \$k	Engineer [month]	Technician [month]	Designer [month]
Location Summary						\$ 430	11	18	32
1	Modify F2 refrigerator building	3	each	1	\$ 15	\$ 15	-	-	0.3
2	Transferline supports civil work	3	each	1	\$ 20	\$ 20	1	-	1
3	Piping contract	1	each	1	\$ 50	\$ 50	1	1	6
4	Controls and instrumentation	1	each	1	\$ 10	\$ 10	1	2	-
5	ODH system	1	each	1	\$ 10	\$ 10	0.3	4	4
6	U-Tubes	1	each	1	\$ 5	\$ 5	-	1	-
7	Stand alone valve box	1	each	1	\$ 100	\$ 100	1	-	6
8	Bayonet can	3	each	3	\$ 50	\$ 150	1	-	1
9	Transferline	1,2,3	ft	100	\$ 0	\$ 20	1	4	2
10	Expansion box	1	each	1	\$ 50	\$ 50	2	6	12
11	Project management	1	each	-	\$ -	\$ -	2	-	-
12	System engineering	1	each	-	\$ -	\$ -	3	-	-

Notes

- a No G&A is included
- b No contingency is included

Cost Basis

- 1 Past experience
- 2 Vendor quote
- 3 Engineering judgment