

Title	<i>Storage Ring RF Cavities</i>		
Project Requestor	Alireza Nassiri, Geoff Waldschmidt, Doug Horan, Dave Bromberek		
Date	August 18, 2008		
Group Leader(s)	Alireza Nassiri		
Machine or Sector Manager	Louis Emery		
Category	Accelerator R&D		
Content ID*	APS_1269857	Rev.	1
			8/18/08

*This row is filled in automatically on check in to ICMS. See Note ¹

Description:

Start Year (FY)	FY09	Duration (Yr)	5
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Objectives:

Design studies and prototyping of a new class of accelerating cavities for the APS storage ring for potential performance enhancements.

Benefit:

Potential APS storage ring performance enhancements

Risks of Project: See Note ²

Low

Consequences of Not Doing Project: See Note ³

Lose opportunity to improve and enhance APS storage ring accelerating cavities performance.

Cost/Benefit Analysis: See Note ⁴

Benefits includes operation of the APS storage ring at or greater than 100 mA with full beam stability at 300 mA. This will also make it feasible to perhaps further increase beam current.

Description:

The scope of this work consists of:

1. Design, development, and prototyping of a highly power-efficient 352-MHz single-cell copper cavity with strong higher order mode damping suitable for stable high beam current operation (300 mA – 400 mA).
2. Design, development, and prototyping of a new 500-MHz (h=1840) single cell superconducting cavity as potential replacement of the existing storage ring cavities. The choice of a higher frequency will enable us to reach a higher accelerating gradient, thus, reducing the total number of cavities from sixteen to ten. This will allow storage ring operation up to 400 mA.

Funding Details

Cost: (\$K)

Use FY08 dollars.

1	150	
2	200	
3	300	
4	300	
5	200	
6		
7		
8		
9		
Total	1150	

Contingency may be in dollars or percent. Enter figure for total project contingency.

APS Strategic Planning Proposal

Effort: (FTE)

The effort portion need not be filled out in detail by March 28

Year	Mechanical Engineer	Electrical Engineer	Physicist	Software Engineer	Tech	Designer	Post Doc	Total
1	0.15	0.25	0.1	0				0.5
2	0.2	0.25	0	0				0.45
3	0.2	0.5	0	0.2				0.9
4	0.2	0.5	0	0.2				0.9
5	0.15	0.5	0.1	0.3				1.05
6								0
7								0
8								0
9								0

Notes:

¹ **ICMS.** Check in first revision to ICMS as a *New Check In*. Subsequent revisions should be checked in as revisions to that document i.e. *Check Out* the previous version and *Check In* the new version. Be sure to complete the *Document Date* field on the check in screen.

² **Risk Assessment.** Advise of the potential impact to the facility or operations that may result as a consequence of performing the proposed activity. Example: If the proposed project is undertaken then other systems impacted by the work include ... (If no assessment is appropriate then enter NA.)

³ **Consequence Assessment.** Advise of the potential consequences to the facility or to operations if the proposal is not executed. Example: If the proposed project is not undertaken then ____ may happen to the facility. (If no assessment is appropriate then enter NA.)

⁴ **Cost Benefit Analysis.** Describe cost efficiencies or value of the risk mitigated by the expenditure. Example: Failure to complete this maintenance project will result in increased total costs to the APS for emergency repairs and this investment of ____ will also result in improved reliability of _____. (If no assessment is appropriate then enter NA.)