Fiscal Year:	FY 2016	**Task Last Updated:**	FY 11/23/2015
PI Name:	Chesny, David Ph.D.		
Project Title:	Mitigation of the Spacecraft Radiation Environment Via Magnetic Shielding by an Array of Dispersed Superconducting Magnets (Postdoctoral Fellowship)		
Division Name:	Human Research		
Program/Discipline:			
Program/Discipline--Element/Subdiscipline:	NSBRI--Radiation Effects Team		
Joint Agency Name:		**TechPort:**	No
Human Research Program Elements:	None		
Human Research Program Risks:	None		
Space Biology Element:	None		
Space Biology Cross-Element Discipline:	None		
Space Biology Special Category:	None		
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Zip Code:	32901	**Congressional District:**	8
Comments:			
Project Type:	GROUND	**Solicitation:**	2015 NSBRI-RFA-15-01 First Award Fellowships
Start Date:	10/01/2015	**End Date:**	09/30/2016
No. of Post Docs:		**No. of PhD Degrees:**	
No. of PhD Candidates:		**No. of Master' Degrees:**	
No. of Master's Candidates:		**No. of Bachelor's Degrees:**	
No. of Bachelor's Candidates:		**Monitoring Center:**	NSBRI
Contact Monitor:		**Contact Phone:**	
Contact Email:			
Flight Program:			
Flight Assignment:			
Key Personnel Changes/Previous PI:			
COI Name (Institution):	Durrance, Samuel Ph.D. (MENTOR/ Florida Institute of Technology)		
Grant/Contract No.:	NCC 9-58-PF04305		
Performance Goal No.:			
Performance Goal Text:			
Task Description:	POSTDOCTORAL FELLOWSHIP Spacecraft are self-contained biospheres that must be designed to protect astronauts from harmful aspects of the interplanetary environment. Radiation encountered in deep space poses a significant threat to the health of astronauts and the success of future NASA missions beyond low-Earth orbit. Isotropic galactic cosmic rays (GCRs) and intermittent solar particle events (SPEs) threaten to cause acute radiation sickness and exceed NASA's permissible exposure limits for cancer risk for explorers in near-term space operations. Thus, effective methods of mitigating this radiation risk are high priorities for National Space Biomedical Research Institute (NSBRI) and NASA. The proposed First Award Fellowship will design a magnetic shielding architecture capable of reducing the amount of radiation by a factor of 4 that reaches the astronaut habitat, thus alleviating many biological uncertainties associated with this risk. Through		

	computational modeling, the First Award Fellow will investigate the spectra of harmful radiation and will design a “swarm-bot” type magnetic field configuration that will deflect incoming radiation, thus forming a “safe-region” within the astronaut habitat. The novel method proposed here will work in concert with many aspects of existing superconductor technology. This system will be shown to operate in parallel with the existing NASA Orion spacecraft infrastructure and in a continuous mode but without the need for continuous power. The success of the fellowship will lay the groundwork for future laboratory demonstrations of this technology as a stepping stone for the career aspirations of the First Award Fellow.
Rationale for HRP Directed Research:	
Research Impact/Earth Benefits:	
Task Progress:	New project for FY2016.
Bibliography Type:	Description: (Last Updated:)