



Cover Page for Proposal
Submitted to the
National Aeronautics and
Space Administration

NASA Proposal Number
09-EPOESS09-0083

NASA PROCEDURE FOR HANDLING PROPOSALS

This proposal shall be used and disclosed for evaluation purposes only, and a copy of this Government notice shall be applied to any reproduction or abstract thereof. Any authorized restrictive notices that the submitter places on this proposal shall also be strictly complied with. Disclosure of this proposal for any reason outside the Government evaluation purposes shall be made only to the extent authorized by the Government.

SECTION I - Proposal Information

Principal Investigator Joel Primack		E-mail Address joel@scipp.ucsc.edu		Phone Number 831-459-2580		
Street Address (1) 1156 High St			Street Address (2) Physics Department			
City Santa Cruz		State / Province CA		Postal Code 95064-1077		Country Code US
Proposal Title : Public Outreach via Cosmological Simulation Visualizations						
Proposed Start Date 01 / 01 / 2010	Proposed End Date 12 / 31 / 2012	Total Budget 656320.00	Year 1 Budget 226399.00	Year 2 Budget 214348.00	Year 3 Budget 215573.00	Year 4 Budget 0.00

SECTION II - Application Information

NASA Program Announcement Number NNH09ZDA001N-EPOESS		NASA Program Announcement Title Opportunities In Education and Public Outreach For Earth and Space Science				
For Consideration By NASA Organization (<i>the soliciting organization, or the organization to which an unsolicited proposal is submitted</i>) NASA , Headquarters , Science Mission Directorate , Cross Division						
Date Submitted 07 / 01 / 2009		Submission Method Electronic Submission Only		Grants.gov Application Identifier		Applicant Proposal Identifier
Type of Application New	Predecessor Award Number		Other Federal Agencies to Which Proposal Has Been Submitted			
International Participation No	Type of International Participation					

SECTION III - Submitting Organization Information

DUNS Number 125084723	CAGE Code 1CV82	Employer Identification Number (EIN or TIN) 941539563	Organization Type 2A			
Organization Name (Legal Name) UNIVERSITY OF CALIFORNIA, SANTA CRUZ					Company Division	
Organization DBA Name CHANCELLOR'S OFFICE					Division Number	
Street Address (1) 1156 HIGH ST			Street Address (2)			
City SANTA CRUZ		State / Province CA		Postal Code 950641077		Country Code USA

SECTION IV - Proposal Point of Contact Information

Name Joel Primack		Email Address joel@scipp.ucsc.edu		Phone Number 831-459-2580	
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SECTION V - Certification and Authorization

Certification of Compliance with Applicable Executive Orders and U.S. Code

By submitting the proposal identified in the Cover Sheet/Proposal Summary in response to this Research Announcement, the Authorizing Official of the proposing organization (or the individual proposer if there is no proposing organization) as identified below:

- certifies that the statements made in this proposal are true and complete to the best of his/her knowledge;
- agrees to accept the obligations to comply with NASA award terms and conditions if an award is made as a result of this proposal; and
- confirms compliance with all provisions, rules, and stipulations set forth in the two Certifications and one Assurance contained in this NRA (namely, (i) the Assurance of Compliance with the NASA Regulations Pursuant to Nondiscrimination in Federally Assisted Programs, and (ii) Certifications, Disclosures, and Assurances Regarding Lobbying and Debarment and Suspension.

Willful provision of false information in this proposal and/or its supporting documents, or in reports required under an ensuing award, is a criminal offense (U.S. Code, Title 18, Section 1001).

Authorized Organizational Representative (AOR) Name Sharon Collum		AOR E-mail Address scollum@ucsc.edu		Phone Number 831-459-1378	
AOR Signature (<i>Must have AOR's original signature. Do not sign "for" AOR.</i>)					Date

PI Name : Joel Primack		NASA Proposal Number	
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ		09-EPOESS09-0083	
Proposal Title : Public Outreach via Cosmological Simulation Visualizations			
SECTION VI - Team Members			
Team Member Name Joel Primack		E-mail Address joel@scipp.ucsc.edu	Phone Number 831-459-2580
Organization Name University of California, Santa Cruz		Team Member Role PI	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency	Total Funds Requested 0.00	
Team Member Name Thomas Cox		E-mail Address tcox@cfa.harvard.edu	Phone Number 617-384-7695
Organization Name Harvard-Smithsonian Center for Astrophysics		Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency	Total Funds Requested 0.00	
Team Member Name Francisco Prada		E-mail Address fprada@iaa.es	Phone Number 34-958-230626
Organization Name Instituto de Astrofisica de Andalucia (CSIC)		Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency	Total Funds Requested 0.00	
Team Member Name Karl von Ahnen		E-mail Address vonahnenkarl@deanza.edu	Phone Number 408-864-8282
Organization Name Planetarium, De Anza College		Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency	Total Funds Requested 0.00	
Team Member Name Chris Henze		E-mail Address chenze@nas.nasa.gov	Phone Number 650-604-3959
Organization Name NASA Ames Research Center		Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation Yes	U.S. Government Agency NASA Ames Research Center	Total Funds Requested 0.00	
Team Member Name Michael Busha		E-mail Address mbusha@stanford.edu	Phone Number 650-704-2084
Organization Name Stanford University		Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency	Total Funds Requested 0.00	
Team Member Name Lucy Fortson		E-mail Address lfortson@adlerplanetarium.org	Phone Number 312-322-0338
Organization Name Adler Planetarium and Astronomy Museum		Team Member Role Co-I	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency	Total Funds Requested 0.00	
Team Member Name Anatoly Klypin		E-mail Address aklypin@nmsu.edu	Phone Number 505-646-1400
Organization Name New Mexico State University		Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency	Total Funds Requested 0.00	

Team Member Name Ryan Wyatt		E-mail Address rwyatt@calacademy.org		Phone Number 415-827-4855
Organization Name California Academy of Sciences			Team Member Role Co-I	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency		Total Funds Requested 0.00	
Team Member Name Risa Wechsler		E-mail Address rwechsler@stanford.edu		Phone Number 650-704-6932
Organization Name Stanford University			Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency		Total Funds Requested 0.00	
Team Member Name Patrik Jonsson		E-mail Address patrik@ucolick.org		Phone Number 831-459-3039
Organization Name Univ. of California			Team Member Role Collaborator	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency		Total Funds Requested 0.00	
Team Member Name Mark SubbaRao		E-mail Address msubbarao@adlerplanetarium.org		Phone Number 312-294-0348
Organization Name Adler Planetarium and Astronomy Museum			Team Member Role Co-I	International Participation No
U.S. Government Agency Participation No	U.S. Government Agency		Total Funds Requested 0.00	

PI Name : Joel Primack	NASA Proposal Number
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ	09-EPOESS09-0083
Proposal Title : Public Outreach via Cosmological Simulation Visualizations	

SECTION VII - Project Summary

The visible material in the universe -- stars, gas, dust, planets, etc. -- accounts for only about 0.5% of the cosmic density. The remaining 99.5% of the universe is invisible. Most of it is dark matter (~23%) and dark energy (~72%), with non-luminous baryons making up ~4%. In order to describe the evolution and structure of the universe, it is essential to show the distribution of dark matter and the relationship of dark matter to visible structures. We propose to make visualizations of state-of-the-art simulations of cosmology and galaxy formation, and distribute them to planetariums and other outreach venues. Our cosmological simulations show the evolution of the dark matter cosmic web that forms the backbone along which galaxies and clusters form. Our galaxy formation and galaxy merger simulations show galaxies realistically, using our Sunrise code to simulate both stellar evolution and reprocessing of light by dust. We propose to work with the NASA Ames Research Center visualization team to visualize the simulations, and with the Adler and Morrison Planetariums to plan the visualizations including developing methods to show the multicomponent universe, to try the visualizations out on public audiences and evaluate their successes and needs for improvement, and to make them available to digital planetariums worldwide. We will also make videos based on these visualizations available to other venues, including on the web. These new visualizations will enrich the materials available to show how astrophysicists are calculating the physical processes that result in observed properties of galaxies and of the large scale structure of the universe. The visualizations will show how invisible dark matter shapes the visible universe. Astronomical observations represent snapshots of particular moments in time; it is the role of astrophysical theory to produce movies that link these snapshots together into a coherent physical theory.

PI Name : Joel Primack				NASA Proposal Number	
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ				09-EPOESS09-0083	
Proposal Title : Public Outreach via Cosmological Simulation Visualizations					
SECTION VIII - Other Project Information					
Proprietary Information					
Is proprietary/privileged information included in this application? Yes					
International Collaboration					
Does this project involve activities outside the U.S. or partnership with International Collaborators? No					
Principal Investigator No	Co-Investigator No	Collaborator No	Equipment No	Facilities No	
Explanation :					
NASA Civil Servant Project Personnel					
Are NASA civil servant personnel participating as team members on this project (include funded and unfunded)? Yes					
Fiscal Year 2010	Fiscal Year 2011	Fiscal Year 2012			
Number of FTEs 1	Number of FTEs 1	Number of FTEs 1			

PI Name : Joel Primack		NASA Proposal Number
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ		09-EPOESS09-0083
Proposal Title : Public Outreach via Cosmological Simulation Visualizations		
SECTION VIII - Other Project Information		
Environmental Impact		
Does this project have an actual or potential impact on the environment? No	Has an exemption been authorized or an environmental assessment (EA) or an environmental impact statement (EIS) been performed? No	
Environmental Impact Explanation:		
Exemption/EA/EIS Explanation:		

PI Name : Joel Primack	NASA Proposal Number 09-EPOESS09-0083
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ	
Proposal Title : Public Outreach via Cosmological Simulation Visualizations	
SECTION VIII - Other Project Information	
Historical Site/Object Impact	
Does this project have the potential to affect historic, archeological, or traditional cultural sites (such as Native American burial or ceremonial grounds) or historic objects (such as an historic aircraft or spacecraft)? No	
Explanation:	

PI Name : Joel Primack	NASA Proposal Number
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ	09-EPOESS09-0083

Proposal Title : **Public Outreach via Cosmological Simulation Visualizations**

SECTION IX - Program Specific Data

Question 1 : Short Title:

Answer: Public Outreach via Cosmological Simulation Visualizations

Question 2 : Type of institution:

Answer: Educational Organization

Question 3 : Will any funding be provided to a federal government organization including NASA Centers, JPL, other Federal agencies, government laboratories, or Federally Funded Research and Development Centers (FFRDCs)?

Answer: No

Question 4 : Is this Federal government organization a different organization from the proposing (PI) organization?

Answer: N/A

Question 5 : Does this proposal include the use of NASA-provided high end computing?

Answer: Yes

Question 6 : Research Category:

Answer: 1) Theory/computer modeling

Question 7 : Team Members Missing From Cover Page:

Answer:

**Nina McCurdy, UCSC, Santa Cruz, CA, Staff: planetarium liason, programmer, webmaster
Michelle Nichols, Adler Planetarium, Chicago, IL, Master Educator: Formative Evaluations**

Question 8 : This proposal contains information and/or data that are subject to U.S. export control laws and regulations including Export Administration Regulations (EAR) and International Traffic in Arms Regulations (ITAR).

Answer: No

Question 9 : I have identified the export-controlled material in this proposal.

Answer: N/A

Question 10 : I acknowledge that the inclusion of such material in this proposal may complicate the government's ability to evaluate the proposal.

Answer: N/A

Question 11 : Portfolio Area:

Answers :

Outreach

Question 12 : Science Focus:

Answers :

Astrophysics

Question 13 : Does the proposal include any funds that would be used to support civil servant or contract personnel at any NASA Center, or federal agency, or Federally Funded Research and Development Centers such as JPL or Los Alamos?

Answer: No

Question 14 : If the lead institution is a for-profit organization, is there any fee or other cost, that would preclude use of a grant as an award funding mechanism.

Answer:

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Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ				09-EPOESS09-0083	
Proposal Title : Public Outreach via Cosmological Simulation Visualizations					
SECTION X - Budget					
Cumulative Budget					
Budget Cost Category	Funds Requested (\$)				
	Year 1 (\$)	Year 2 (\$)	Year 3 (\$)	Year 4 (\$)	Total Project (\$)
A. Direct Labor - Key Personnel	9697.00	9989.00	10289.00	0.00	29975.00
B. Direct Labor - Other Personnel	74260.00	75545.00	76867.00	0.00	226672.00
Total Number Other Personnel	4	4	4	0	12
Total Direct Labor Costs (A+B)	83957.00	85534.00	87156.00	0.00	256647.00
C. Direct Costs - Equipment	0.00	0.00	0.00	0.00	0.00
D. Direct Costs - Travel	11500.00	11500.00	11500.00	0.00	34500.00
Domestic Travel	11500.00	11500.00	11500.00	0.00	34500.00
Foreign Travel	0.00	0.00	0.00	0.00	0.00
E. Direct Costs - Participant/Trainee Support Costs	0.00	0.00	0.00	0.00	0.00
Tuition/Fees/Health Insurance	0.00	0.00	0.00	0.00	0.00
Stipends	0.00	0.00	0.00	0.00	0.00
Travel	0.00	0.00	0.00	0.00	0.00
Subsistence	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	0.00	0.00	0.00
Number of Participants/Trainees					0
F. Other Direct Costs	58607.00	64766.00	60959.00	0.00	184332.00
Materials and Supplies	0.00	0.00	0.00	0.00	0.00
Publication Costs	0.00	0.00	0.00	0.00	0.00
Consultant Services	0.00	0.00	0.00	0.00	0.00
ADP/Computer Services	0.00	0.00	0.00	0.00	0.00
Subawards/Consortium/Contractual Costs	58607.00	64766.00	50959.00	0.00	174332.00
Equipment or Facility Rental/User Fees	0.00	0.00	0.00	0.00	0.00
Alterations and Renovations	0.00	0.00	0.00	0.00	0.00
Other	0.00	0.00	10000.00	0.00	10000.00
G. Total Direct Costs (A+B+C+D+E+F)	154064.00	161800.00	159615.00	0.00	475479.00
H. Indirect Costs	72335.00	52548.00	55958.00	0.00	180841.00
I. Total Direct and Indirect Costs (G+H)	226399.00	214348.00	215573.00	0.00	656320.00
J. Fee	0.00	0.00	0.00	0.00	0.00
K. Total Cost (I+J)	226399.00	214348.00	215573.00	0.00	656320.00
Total Cumulative Budget					656320.00

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Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ						09-EPOESS09-0083		
Proposal Title : Public Outreach via Cosmological Simulation Visualizations								
SECTION X - Budget								
Start Date : 01 / 01 / 2010		End Date : 12 / 31 / 2010		Budget Type : Project		Budget Period : 1		
A. Direct Labor - Key Personnel								
Name	Project Role	Base Salary (\$)	Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Primack, Joel	PI	17088.88		.5		8544.00	1153.00	9697.00
Total Key Personnel Costs								9697.00
B. Direct Labor - Other Personnel								
Number of Personnel	Project Role	Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)	
1	Post Doctoral Associates	12			20000.00	5400.00	25400.00	
1	Graduate Students			3	9978.00	249.00	10227.00	
1	Jr. Specialist	12			26928.00	5655.00	32583.00	
1	Visiting Researcher	1			5000.00	1050.00	6050.00	
4	Total Number Other Personnel	Total Other Personnel Costs					74260.00	
Total Direct Labor Costs (Salary, Wages, Fringe Benefits) (A+B)								83957.00

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Proposal Title : Public Outreach via Cosmological Simulation Visualizations			
SECTION X - Budget			
Start Date : 01 / 01 / 2010	End Date : 12 / 31 / 2010	Budget Type : Project	Budget Period : 1
C. Direct Costs - Equipment			
Item No.	Equipment Item Description	Funds Requested (\$)	
	Total Equipment Costs	0.00	
D. Direct Costs - Travel			
		Funds Requested (\$)	
1. Domestic Travel (Including Canada, Mexico, and U.S. Possessions)		11500.00	
2. Foreign Travel		0.00	
	Total Travel Costs	11500.00	
E. Direct Costs - Participant/Trainee Support Costs			
		Funds Requested (\$)	
1. Tuition/Fees/Health Insurance		0.00	
2. Stipends		0.00	
3. Travel		0.00	
4. Subsistence		0.00	
Number of Participants/Trainees:		Total Participant/Trainee Support Costs	0.00

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SECTION X - Budget			
Start Date : 01 / 01 / 2010	End Date : 12 / 31 / 2010	Budget Type : Project	Budget Period : 1
F. Other Direct Costs			
			Funds Requested (\$)
1. Materials and Supplies			0.00
2. Publication Costs			0.00
3. Consultant Services			0.00
4. ADP/Computer Services			0.00
5. Subawards/Consortium/Contractual Costs			58607.00
6. Equipment or Facility Rental/User Fees			0.00
7. Alterations and Renovations			0.00
Total Other Direct Costs			58607.00
G. Total Direct Costs			
			Funds Requested (\$)
Total Direct Costs (A+B+C+D+E+F)			154064.00
H. Indirect Costs			
	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
MTDC	51.50	140457.00	72335.00
Cognizant Federal Agency: Wallace Chan on behalf of the Federal Government 415-437-7820	Total Indirect Costs		72335.00
I. Direct and Indirect Costs			
			Funds Requested (\$)
Total Direct and Indirect Costs (G+H)			226399.00
J. Fee			
			Funds Requested (\$)
Fee			0.00
K. Total Cost			
			Funds Requested (\$)
Total Cost with Fee (I+J)			226399.00

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Proposal Title : Public Outreach via Cosmological Simulation Visualizations									
SECTION X - Budget									
Start Date : 01 / 01 / 2011		End Date : 12 / 31 / 2011		Budget Type : Project		Budget Period : 2			
A. Direct Labor - Key Personnel									
Name		Project Role	Base Salary (\$)	Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Primack, Joel		PI	17601.55		.5		8801.00	1188.00	9989.00
Total Key Personnel Costs								9989.00	
B. Direct Labor - Other Personnel									
Number of Personnel	Project Role		Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)	
1	Post Doctoral Associates		12			20000.00	5400.00	25400.00	
1	Graduate Students				3	10277.00	257.00	10534.00	
1	Jr. Specialist		12			27736.00	5825.00	33561.00	
1	Visiting Researcher		1			5000.00	1050.00	6050.00	
4	Total Number Other Personnel							Total Other Personnel Costs	
								75545.00	
Total Direct Labor Costs (Salary, Wages, Fringe Benefits) (A+B)									85534.00

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SECTION X - Budget			
Start Date : 01 / 01 / 2011	End Date : 12 / 31 / 2011	Budget Type : Project	Budget Period : 2
C. Direct Costs - Equipment			
Item No.	Equipment Item Description		Funds Requested (\$)
	Total Equipment Costs		0.00
D. Direct Costs - Travel			
			Funds Requested (\$)
1.	Domestic Travel (Including Canada, Mexico, and U.S. Possessions)		11500.00
2.	Foreign Travel		0.00
	Total Travel Costs		11500.00
E. Direct Costs - Participant/Trainee Support Costs			
			Funds Requested (\$)
1.	Tuition/Fees/Health Insurance		0.00
2.	Stipends		0.00
3.	Travel		0.00
4.	Subsistence		0.00
Number of Participants/Trainees:		Total Participant/Trainee Support Costs	0.00

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SECTION X - Budget			
Start Date : 01 / 01 / 2011	End Date : 12 / 31 / 2011	Budget Type : Project	Budget Period : 2
F. Other Direct Costs			
			Funds Requested (\$)
1. Materials and Supplies			0.00
2. Publication Costs			0.00
3. Consultant Services			0.00
4. ADP/Computer Services			0.00
5. Subawards/Consortium/Contractual Costs			64766.00
6. Equipment or Facility Rental/User Fees			0.00
7. Alterations and Renovations			0.00
Total Other Direct Costs			64766.00
G. Total Direct Costs			
			Funds Requested (\$)
Total Direct Costs (A+B+C+D+E+F)			161800.00
H. Indirect Costs			
	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
MTDC	51.50	102034.00	52548.00
Cognizant Federal Agency: Wallace Chan on behalf of the Federal Government 415-437-7820	Total Indirect Costs		52548.00
I. Direct and Indirect Costs			
			Funds Requested (\$)
Total Direct and Indirect Costs (G+H)			214348.00
J. Fee			
			Funds Requested (\$)
Fee			0.00
K. Total Cost			
			Funds Requested (\$)
Total Cost with Fee (I+J)			214348.00

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SECTION X - Budget									
Start Date : 01 / 01 / 2012		End Date : 12 / 31 / 2012		Budget Type : Project		Budget Period : 3			
A. Direct Labor - Key Personnel									
Name		Project Role	Base Salary (\$)	Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Primack, Joel		PI	18129.59		.5		9065.00	1224.00	10289.00
Total Key Personnel Costs								10289.00	
B. Direct Labor - Other Personnel									
Number of Personnel	Project Role		Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)	
1	Post Doctoral Associates		12			20000.00	5400.00	25400.00	
1	Graduate Students				3	10585.00	265.00	10850.00	
1	Jr. Specialist		12			28568.00	5999.00	34567.00	
1	Visiting Researcher		1			5000.00	1050.00	6050.00	
4	Total Number Other Personnel							Total Other Personnel Costs	
									76867.00
Total Direct Labor Costs (Salary, Wages, Fringe Benefits) (A+B)									87156.00

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SECTION X - Budget			
Start Date : 01 / 01 / 2012	End Date : 12 / 31 / 2012	Budget Type : Project	Budget Period : 3
C. Direct Costs - Equipment			
Item No.	Equipment Item Description		Funds Requested (\$)
	Total Equipment Costs		0.00
D. Direct Costs - Travel			
			Funds Requested (\$)
1. Domestic Travel (Including Canada, Mexico, and U.S. Possessions)			11500.00
2. Foreign Travel			0.00
	Total Travel Costs		11500.00
E. Direct Costs - Participant/Trainee Support Costs			
			Funds Requested (\$)
1. Tuition/Fees/Health Insurance			0.00
2. Stipends			0.00
3. Travel			0.00
4. Subsistence			0.00
Number of Participants/Trainees:	Total Participant/Trainee Support Costs		0.00

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SECTION X - Budget				
Start Date : 01 / 01 / 2012	End Date : 12 / 31 / 2012	Budget Type : Project	Budget Period : 3	
F. Other Direct Costs				
				Funds Requested (\$)
1. Materials and Supplies				0.00
2. Publication Costs				0.00
3. Consultant Services				0.00
4. ADP/Computer Services				0.00
5. Subawards/Consortium/Contractual Costs				50959.00
6. Equipment or Facility Rental/User Fees				0.00
7. Alterations and Renovations				0.00
8. Other: Travel Awards				10000.00
Total Other Direct Costs				60959.00
G. Total Direct Costs				
				Funds Requested (\$)
Total Direct Costs (A+B+C+D+E+F)				159615.00
H. Indirect Costs				
	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)	
MTDC	51.50	108656.00	55958.00	
Cognizant Federal Agency: Wallace Chan on behalf of the Federal Government		Total Indirect Costs		55958.00
415-437-7820				
I. Direct and Indirect Costs				
				Funds Requested (\$)
Total Direct and Indirect Costs (G+H)				215573.00
J. Fee				
				Funds Requested (\$)
			Fee	0.00
K. Total Cost				
				Funds Requested (\$)
Total Cost with Fee (I+J)				215573.00

PI Name : Joel Primack						NASA Proposal Number			
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ						09-EPOESS09-0083			
Proposal Title : Public Outreach via Cosmological Simulation Visualizations									
SECTION X - Budget									
Start Date :		End Date :		Budget Type :		Budget Period :			
				Project		4			
A. Direct Labor - Key Personnel									
Name		Project Role	Base Salary (\$)	Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)
Primack, Joel		PI	0.00				0.00	0.00	0.00
Total Key Personnel Costs								0.00	
B. Direct Labor - Other Personnel									
Number of Personnel	Project Role		Cal. Months	Acad. Months	Summ. Months	Requested Salary (\$)	Fringe Benefits (\$)	Funds Requested (\$)	
0	Total Number Other Personnel		Total Other Personnel Costs					0.00	
Total Direct Labor Costs (Salary, Wages, Fringe Benefits) (A+B)								0.00	

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Proposal Title : Public Outreach via Cosmological Simulation Visualizations				
SECTION X - Budget				
Start Date :		End Date :		Budget Type : Project
				Budget Period : 4
C. Direct Costs - Equipment				
Item No.	Equipment Item Description			Funds Requested (\$)
	Total Equipment Costs			0.00
D. Direct Costs - Travel				
				Funds Requested (\$)
1.	Domestic Travel (Including Canada, Mexico, and U.S. Possessions)			0.00
2.	Foreign Travel			0.00
	Total Travel Costs			0.00
E. Direct Costs - Participant/Trainee Support Costs				
				Funds Requested (\$)
1.	Tuition/Fees/Health Insurance			0.00
2.	Stipends			0.00
3.	Travel			0.00
4.	Subsistence			0.00
Number of Participants/Trainees:		Total Participant/Trainee Support Costs		0.00

PI Name : Joel Primack		NASA Proposal Number	
Organization Name : UNIVERSITY OF CALIFORNIA, SANTA CRUZ		09-EPOESS09-0083	
Proposal Title : Public Outreach via Cosmological Simulation Visualizations			
SECTION X - Budget			
Start Date :	End Date :	Budget Type : Project	Budget Period : 4
F. Other Direct Costs			
			Funds Requested (\$)
1. Materials and Supplies			0.00
2. Publication Costs			0.00
3. Consultant Services			0.00
4. ADP/Computer Services			0.00
5. Subawards/Consortium/Contractual Costs			0.00
6. Equipment or Facility Rental/User Fees			0.00
7. Alterations and Renovations			0.00
Total Other Direct Costs			0.00
G. Total Direct Costs			
			Funds Requested (\$)
Total Direct Costs (A+B+C+D+E+F)			0.00
H. Indirect Costs			
	Indirect Cost Rate (%)	Indirect Cost Base (\$)	Funds Requested (\$)
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
	0.00	0.00	0.00
Cognizant Federal Agency:	Total Indirect Costs		0.00
I. Direct and Indirect Costs			
			Funds Requested (\$)
Total Direct and Indirect Costs (G+H)			0.00
J. Fee			
			Funds Requested (\$)
Fee			0.00
K. Total Cost			
			Funds Requested (\$)
Total Cost with Fee (I+J)			0.00