

**Muon Ordinary capture for the Nuclear Matrix elements in  $\beta\beta$  decays**

**MONUMENT**

Code of theme: **03-2-1100-2019/2021**

*Dzhelepov Laboratory of Nuclear Problems (DLNP JINR), Dubna*

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PROJECT ENDORSEMENT LIST

**Muon Ordinary capture for the Nuclear Matrix elements in  $\beta\beta$  decays  
MONUMENT**

CODE OF THEME **03-2-1100-2019/2021**

NAME OF PROJECT LEADER: **Daniya ZINATULINA**

APPROVED BY JINR DIRECTOR	SIGNATURE	DATE
ENDORSED BY		
JINR VICE-DIRECTOR	SIGNATURE	DATE
CHIEF SCIENTIFIC SECRETARY	SIGNATURE	DATE
CHIEF ENGINEER	SIGNATURE	DATE
HEAD OF SCIENCE ORGANIZATION DEPARTMENT	SIGNATURE	DATE
LABORATORY DIRECTOR	SIGNATURE	DATE
LABORATORY CHIEF ENGINEER	SIGNATURE	DATE
PROJECT LEADER	SIGNATURE	DATE
PROJECT DEPUTY LEADERS	SIGNATURE	DATE
ENDORSED		
RESPECTIVE PAC	SIGNATURE	DATE

**Schedule proposal and resources required for the prolongation of the Project  
Muon ordinary capture for the nuclear matrix elements in  $\beta\beta$  decays  
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Expenditures, resources, financing sources		Costs (k\$) Resource Require- ments	Proposals of the Labora- tory on the distribution of finances and resources			
			1 <sup>st</sup> yr	2 <sup>nd</sup> yr	3 <sup>rd</sup> yr	
Expenditures		Target materials (enriched stable isotopes, holders for the target, target itself)	40	16	8	16
		Materials for the muon veto counters (scintillators, PMTs, WLS fibers, adapters, SiPMs, mechanics)	18	15	3	0
		Components and materials for R&D (optic glue, cables, connectors, instruments, etc.)	5	2	3	0
		HPGe detectors	130	75	55	0
		Electronics for the <b>S3</b> detector (VME- and NIM-crates and devices, PC and additional hard disks for data)	34	20	12	2
		<b>Total</b>	<b>227</b>	<b>128</b>	<b>81</b>	<b>18</b>
Required resources	Standard hour	Resources of				
		– Laboratory design bureau – Laboratory experimental workshop	300 600	100 200	100 200	100 200
Financing sources	Budgetary resources	Budget expenditures including foreign-currency resources.	<b>227</b>	<b>128</b>	<b>81</b>	<b>18</b>
	External resources	<i>Contributions by collaborators.</i>  <i>Grants</i> <i>(these funds are not currently guaranteed)</i>	20  15	10  5	5  5	5  5

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**Estimated expenditures for the Project**  
**Muon ordinary capture for the nuclear matrix elements in  $\beta\beta$  decays**  
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NN	Expenditure items	Full cost	1 <sup>st</sup> yr	2 <sup>nd</sup> yr	3 <sup>rd</sup> yr
	Direct expenses for the Project				
1.	Computer connection	\$ 6 k	2	2	2
2.	Design bureau	300 std hours	100	100	100
3.	Experimental Workshop	600 std hours	200	200	200
4.	Materials	\$ 63 k	33	14	16
5.	Equipment	\$ 164 k	95	67	2
6.	Transportation of equipment	\$ 30 k	10	10	10
7.	Collaboration meetings and workshops	\$ 15 k	5	5	5
8.	Travel allowance, including:	\$ 100 k	35	35	30
	a) non-rouble zone countries	\$ 100 k	35	35	30
	b) rouble zone countries	-	-	-	-
	c) protocol-based	-	-	-	-
	<b>Total direct expenses:</b>	<b>\$ 378 k</b>	<b>180</b>	<b>133</b>	<b>65</b>

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LABORATORY DIRECTOR

LABORATORY CHIEF ENGINEER-ECONOMIST