Doctoral student's name and surname: **Kristaps Paļskis**

Faculty, institute of RTU: Center of High-Energy Particle Physics and Accelerator Technologies

2nd year Doctoral study plan and it's implementation

From September, 2022 until September, 2023

1. EXAMS, ADDITIONAL COURSES

No.	Subjects (Name of the course, CP)	Information about performance
	Academic courses provided by Riga Technical university	
	To be selected based on the course availability for the 2nd year Courses willing to take, based on previously provided course availability (as from 1st year): • Computer Aided Design • Electronics Lab • Data Science for Physics	
	Total number of credit points: ***Based on provided course availability***	
	Additional external courses or schools	
1.	Joint Universities Accelerator School (JUAS) 2023: *Course 1: The Science of Particle Accelerators (09.01.2023 – 10.02.2023)*	
2.	Joint Universities Accelerator School (JUAS) 2023: *Course 2: The Technology & Applications of Particle Accelerators (13.02.2023 – 17.03.2023)*	
3.	***Based on availability:*** PSI Winter School for Protons 2023 *(15.01.2023 – 19.01.2023)*	
4.	***Based on availability:*** *HITRIplus* Clinical course in Heavy Ion Therapy *(Summer 2023)*	

2. SCIENTIFIC RESEARCH WORK: THESIS AND ADDITIONAL

No.	Stage of research work	Information about performance
1.	*Thesis*: literature report on analysis current stage of applicable scientific papers and theoretical literature	
2.	*Thesis*: completed mathematical simulations in regards to ion choice parameters for *FLASH*, both from integrated depth dose (*IDD*) and 3D perspectives of pencil beam convolution with fluence map	
3.	*Thesis*: Outline of proposed experimental validation: plan	
4.	*Thesis*: Initial validation measurements of the outlined experimental plan	
5.	*Additional*: Completed comparisons of ion beams with very high energy electron beams (*VHEE*) as in terms of *FLASH* effectiveness	

6.	*Additional*: Completed evaluation codes applicable for in-vivo treatment range verification method signal estimations – positron emitters and prompt gammas	
7.	*Additional*: Identification of possible accelerator physics/accelerator technology tasks for thesis topic	

3. OTHER TYPES OF WORK

No.	Content of work	Information about performance
1.	*Publications*: Publication regarding the mathematical simulations of different ion type effectiveness for FLASH radiation therapy	
2.	*Based on applicability and availability* *Pedagogical work*: Supervision of bachelor thesis project, with possible extension in supervision for engineering project.	
3.	*Based on applicability and availability* *Pedagogical work & outreach*: Assistance or supervision in high-school student research project in medical physics	
4.	*Outreach:* Oral presentation for Latvian Association in Medical physics and Medical engineering	
5.	*Outreach*: Presentations and related activities with Baltic medical communities, outlining possibilities of ion therapy	
6.	*Outreach:* Participation *RTU TEDx* event with a talk	
7.	***Based on availability*** *Mobility:* Additional visits of German Cancer Research Centre (DKFZ) for further work with supervisor prof. Joao Seco	
8.	***Based on availability and applicability*** *Mobility:* Work visits of PSI, GSI and MedAustron facilities	

4. PLANNED PARTICIPATION IN CONFERENCES

No.	Name, location, time	Information about performance
1.	*Oral presentation:* 8th Baltic Congress of Radiology *06.10.2022 – 08.10.2022, Tallinn*	
2.	*Oral and poster presentation:* 2nd CERN Baltic Conference *(CBC 2022)* *10.10.2022 – 12.10.2022, Vilnius*	
3.	*Poster:* 2nd FLASH Radiotherapy and Particle Therapy conference (*FRTP2022*) *30.11.2022 – 02.12.2022, Barcelona*	
4.	***Based on availability and applicability***: Abstract submission for 61st Particle Therapy Co-Operative group conference *(PTCOG2023)*	
5.	Oral presentations in NIMMS project meetings	