1. Semester report №1
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PhD program: Particle Physics and Astronomy
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Ph.D. Thesis title: Searching for signs of new physics beyond the standard model

Introduction: I am a new international student at ELTE-Doctoral School of Physics from the 2020/2021 Autumn semester. Unfortunately, due to the ongoing pandemic situation I came to Budapest, Hungary at the end of September (23nd of September) and was in 2 weeks quarantine. Because of that I lost almost 5 weeks in my study and had to catch up on lessons. Moreover, it was my first time studying abroad so I had a little struggle with the new environment and time difference.

My previous studies were in my home country, Mongolia. I obtained my master's and bachelor's degrees there in the field of particle physics. For me, there was some difference between the Mongolian and Hungarian educational systems, so I had to catch up on more advanced topics first in order to participate in group research work.

I am a member of ELTE – Particle Phenomenology Group, which has 7 members and supervised by professor Zoltán Trócsányi. Currently, there are many ongoing research topics, for instance: Cosmological constraints on the $U(1)$ extension of Standard Model, Neutrino mass model, and Vacuum stability. My current research interest is a connection between cosmology, inflation and particle physics.

Research work carried out in the current semester: I did not start my research work yet due to the circumstances described in the introduction. However, during the semester, I attended research group meetings to understand and catch up on research topics. Also, I had taken 3 PhD courses, which were Astroparticle Physics, General Theory of Relativity, and Detector systems in particle and nuclear physics.

Publication: Before I started my doctoral study at ELTE, I was a research assistant at the Institute of Physics and Technology, Mongolian Academy of Sciences. When I was working in there I did research with my collaborators and it has published last December.

1. Bilguun Bayarsaikhan, Gansukh Tumurtushaa, Seoktae Koh, Enkhbat Tsedenbaljir, "Constraints on dark energy models from Horndeski theory," *JCAP* 11 (2020) 057;