



От \_\_\_\_\_ № 36

На № \_\_\_\_\_ от \_\_\_\_\_

### Ethical approval

1.	Full name of PhD student	Arshyn Altybay
2.	Specialty of PhD Program	6D075100-Computer Science, Computer Engineering and Management
3.	Time period of study at PhD Program	2017-2020
4.	Theme of the thesis, date of approval	Development of high-performance parallel algorithms and software complex for modeling hyperbolic type equations with singular coefficients: tsunami and acoustic wave propagation, 03.09.2020
5.	Information about scientific supervisor (-s) (Name, title, degree, work position and citizenship)	PhD, Dr. Niyaz Tokmagambetov, al-Farabi Kazakh National University, Kazakhstan PhD, Prof. Michael Ruzhansky, Ghent University, Belgium
6.	Objects of study	High-performance parallel computing, numerical methods, parallel programming technologies, hyperbolic type partial differential equations with singular coefficients, finite difference schemes, software application design tools
7.	Planning, sampling and conducting of study (filled by LEC representative)	Not revealed
8.	Dissemination of results or practical implementation (filled by LEC representative)	Not revealed
9.	Protection of rights, safety and welfare of research objects	- Proof of the existence, uniqueness and consistency of very weak solutions of the tsunami equation and justification by numerical simulations. - The developed parallel computational algorithms for the numerical solution of the hyperbolic type equations with singular coefficients.
10.	Code of approval	IRB-A170
11.	Date of study approval	10.09.2020

Chair of LEC

Secretary of LEC

Ussatayeva G.

Shaukharova M.