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Nearly forgotten results in development of physical cosmology

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NICA is a tool to investigate the early Universe in laboratory. It would be reasonable to recall some critical issues in physical cosmology development. GR was created by A. Einstein in 1915. In 1917 Einstein proposed the first (static) cosmological model. Soon after the A. Eddington proved that the model is unstable therefore it can not be realizable in nature. In 1922 and 1924 A. A. Friedman found non-stationary solutions for cosmological equations written in the framework of GR. In 1927 G. Lemaitre obtained very similar results and, in addition, he derived the Hubble law (E. Hubble obtained this law from observations). Unfortunately, G. Lemaitre published his paper in not very popular Belgium journal. In 1931 Lemaitre proposed the first version of hot Universe model (he called it hypothesis of the primeval atom). In his book «The Primeval Atom – An Essay on Cosmogony» Lemaitre predicted even a background radiation as a signature of his model. At the end of 1940s G. Gamow and his student proposed his hot universe model where he explained primordial nucleosythesis of helium at the intial stage of the Universe evolution. One of the properties of Lemaitre –Gamow model was a prediction of CMB radiation with a temperature around a few K. I would like to recall that the discovery of CMB radiation was done by T. Shmaonov in 1957 (several years before Penzias and Wilson). In 1965, 1970 E. B. Gliner proposed vacuum like equation of matter which could correspond to exponential explosion of the Universe which was later called inflation. For decades, A. A. Friedmann's cosmologocal non-stationary models were treated as purely mathematical results without cosmological and astronomical applications. On September 16, 1925 passed away untimely and it would be reasonable to remind today his great contribution in physical cosmology. "Similarly to Copernicus who forced the Earth to move, Friedmann forced the Universe to expand".

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