

**Sandakova, O. V.; Yanishevsky, D. M.; Panov, V. F.**

**A cosmological scenario with rotation.** (English) Zbl 1437.83169  
*Gravit. Cosmol.* 25, No. 4, 362-365 (2019).

Summary: A Bianchi type IX cosmological model with expansion and rotation has been constructed in the framework of general relativity. The model comprises the Friedmannian stages of the Universe evolution including the subsequent transition to accelerated exponential expansion observed nowadays. The gravitational field sources of the model are ultrarelativistic matter, dust and a comoving anisotropic rotating dark energy. The possibility of detecting the cosmological rotation by astrophysical observations is discussed.

**MSC:**

**83F05** Relativistic cosmology  
**76E20** Stability and instability of geophysical and astrophysical flows  
**85A40** Astrophysical cosmology  
**83C56** Dark matter and dark energy

**Keywords:**

cosmological scenario; rotation; ultrarealistic matter; dark energy; astrophysical observations

**Full Text:** [DOI](#)

**References:**

- [1] Verhodanov, O. V., Cosmological results of the Planck space mission. Comparison with the data of the WMAP and BISEP 2 experiments, *Physics Uspekhi*, 59, 3-41 (2016) · [doi:10.3367/UFNe.0186.201601b.0003](#)
- [2] A. Payez, J. R. Cudell and D. Hutsemekers, "New constraints on very light pseudoscalars," arXiv: 1204.6614.
- [3] Michael J. Longo, "Detection of a dipole in the handedness of spiral galaxies with redshifts  $z < 0.04$ ," arXiv: 1104.2815.
- [4] Krechet, V. G., Modern cosmological data and the rotation of the Universe, *Russ. Phys. J.*, 3, 3-5 (2005)
- [5] Bobrovskih, E. I.; Panov, V. F., Nonstationary cosmological models with rotation of Bianchi type II, *Russ. Phys. J.*, 4, 113 (2012)
- [6] Panov, V. F.; Pavelkin, V. N.; Kuvshinova, E. V.; Sandakova, O. V., Bianchi Type VIII cosmological models with rotating dark energy, *Grav. Cosmol.*, 20, 141 (2014) · [doi:10.1134/S0202289314020078](#)
- [7] Panov, V. F.; Kuvshinova, E. V.; Yanishevsky, D. M.; Sandakova, O. V., Bianchi type II cosmological model of the Universe evolution, *Int. J. Geom. Meth. Mod. Phys.*, 15, 1850016 (2018) · [Zbl 1381.83152](#) · [doi:10.1142/S0219887818500160](#)
- [8] Bradley, J. M.; Sviestins, E., Some rotating, time-dependent Bianchi type VIII cosmologies with heat flow, *Gen. Rel. Grav.*, 16, 1119 (1984) · [doi:10.1007/BF00760236](#)
- [9] Kuvshinova, E. V.; Panov, V. F.; Sandakova, O. V., Bianchi Type VIII cosmological models and astrophysical observations, *Grav. Cosmol.*, 20, 138 (2014) · [doi:10.1134/S020228931402008X](#)
- [10] Sanz, J. L., Dynamical importance of vorticity and shear in the Universe, *J. Math. Phys.*, 23, 1732 (1982) · [Zbl 0509.76050](#) · [doi:10.1063/1.525541](#)
- [11] Panov, V. F.; Sbytov, Y. G., Cosmology: On the possibility of explaining the observational Birch anisotropy by cosmological radiation, *Zh. Eksp. Teor. Fiz.*, 101, 769 (1992)
- [12] Panov, V. F.; Sbytov, Y. G., Behaviour of a bundle of rays forming the images of a source in cosmological models with rotation, *Zh. Eksp. Teor. Fiz.*, 87, 417 (1998)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.