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Modeling of magnetic fields of accretion discs, using no-z- and RZ- approximations

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Accretion discs surrounding neutron stars, black stars and white dwarfs play an important role in theoretical astrophysics. Their evolution is closely connected with the magnetic field structure. Nowadays there are different approaches for studying the magnetic field and the mechanism of its growth. However, we can conclude that it is highly likely that the origin of the magnetic field of the accretion disk is connected with dynamo processes. There is a wide range of models, describing dynamo in objects of different shape. It is necessary to highlight no-z- and RZ-approximations for galactic discs. The first one is very useful for study main effects in thin discs. The RZ-model is better for discs for large half-thickness and it can be used for studying of vertical structure of the magnetic fields. Both of these models can be adopted for accretion discs near compact objects. Here we present the main results of these models and compare them with each other and other approaches for magnetic fields in accretion discs.

References:

1. Shakura N.I., Sunyaev R.A. Black holes in binary systems. Observational appearance //Astronomy and Astrophysics,1973, 24,337
2. Boneva D., Mikhailov E., Pashentseva M., Sokoloff D. Magnetic fields in the accretion discs for various inner boundary conditions// Astronomy and Astrophysics , 2021

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