On the second derivatives of the spin periods and braking indices in radio pulsars

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The analysis of some braking mechanisms for neutron stars was carried out to determine the sign of the second derivative of the pulsar spin period. This quantity is the important parameter for calculations of the braking index n. It is shown that this derivative can be positive and lead to decreasing of n. It is necessary to correct the methods of calculations of n used this moment because they are based as a rule on the suggestion on the constancy of pulsar parameters (magnetic fields, angles between some axes and so on). The estimations of corrections to braking indices are obtained. It is shown that these corrections can be noticeable for pulsars with long periods and their small derivatives.

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