

## **X-ray luminosities from the spin-powered pulsars**

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X-ray luminosities from the spin-powered pulsars are estimated within the framework of the polar cap cascade model and are compared with the observational data from ROSAT and ASCA. The important improvement of the polar cap cascade model is that the contributions of the inverse Compton scattering (ICS) branch emission from the higher generation pairs are added into the conventional curvature-synchrotron scenario. It is found that the low-energy tail of these higher generation ICS branches can have a significant contribution to the non-thermal X-ray emission detectable by ROSAT and ASCA. The polar-cap-heating-contributed thermal X-ray emission is also estimated within the framework of Harding-Muslimov (1998) acceleration model. A combination of both the non-thermal and thermal components successfully reproduced the observed X-ray luminosities of the known spin-powered X-ray pulsars. An important prediction of the model is that the unknown spectral behavior of the most of the millisecond X-ray pulsars should be of thermal origin.