

# **Particle acceleration in the core and annular regions of pulsar magnetospheres**

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It is realized recently that the high altitude acceleration are very important for the  $\gamma$ -ray radiation from pulsars (Qiao et al. 2004, Dyks and Rudak, 2003). There is already some work on the physical foundation of this high altitude acceleration (Muslimov and Harding, 2004). In this presentation, we will demonstrate that the open magnetic field line region should be separated into two parts, the annular and the core regions. It will be shown that the annular region is important for the high altitude acceleration. It is found that the annular cap region is an important plasma source and the secondary pairs can gain higher acceleration within the annular region. This offers physical foundations for the geometrical  $\gamma$ -ray radiative models (Qiao et al. 2004, Dyks and Rudak, 2003).