

## X-ray luminosity function of FSRQ with BAT 105 month catalog and contribution to cosmic MeV gamma-ray background

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FSRQs are important to study cosmic evolution of AGN jet and also interesting how they contribute to the cosmic MeV gamma-ray background. Past studies with hard X-ray (Swift/BAT 22 month catalog) and GeV gamma-ray (Fermi/LAT) reported the X-ray and gamma-ray luminosity function, but predicts a different evolution between X-ray and GeV gamma-ray. Here we used the Swift/BAT 105 month catalog to double the number of sample FSRQs and derived a X-ray luminosity function with luminosity-dependent density evolution model as used in the GeV gamma-ray study. Then we found that the X-ray luminosity function is consistent with that of GeV gamma-ray within uncertainties. Also we calculated the contribution of FSRQs to the cosmic MeV gamma-ray background and found that their contribution is minor. Interestingly, half of our sample FSRQs are not detected by Fermi/LAT, indicating many MeV-peak FSRQs

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