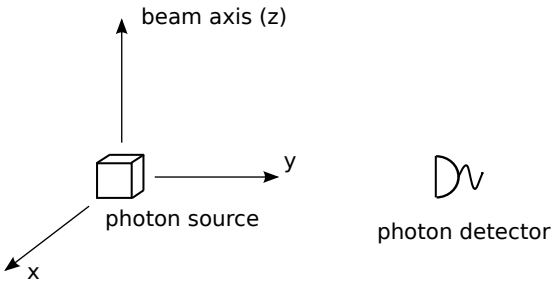
QGP physics – from fixed target to LHC (SS 2013): Homework asssignments

PD Dr. K. Reygers
Dr. K. Schweda

problem sheet 2
6-May-2013

Problem 6: Boosted photon source



The energy spectrum of a static photon source may be given by

$$E\frac{d^3n_\gamma}{d^3p} = A\exp\left(-E/T\right). \tag{1}$$

Show that the inverse slope parameter of the measured photon spectrum is given by $T\sqrt{\frac{1+\beta}{1-\beta}}$ if the source moves with velocity β towards the photon detector. At which source velocity does the measured inverse slope parameter increase by a factor 2?