ERRATUM: “INVERSE COMPTON SCATTERING ON SOLAR PHOTONS, HELIOSPHERIC MODULATION, AND NEUTRINO ASTROPHYSICS” (ApJ, 652, L65 [2006])

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We noticed an error in the description of the distribution of solar photons at an arbitrary distance from the Sun, equations (3) and (4). The correct expression is

\[
Q(r, \phi) = \frac{1}{2\pi} \left[ 1 - \left( 1 - \frac{R^2}{r^2} \right)^{1/2} \right]^{-1},
\]

\[
\left( 1 - \frac{R^2}{r^2} \right)^{1/2} \leq \cos \phi \leq 1;
\]

i.e., \(Q(r, \phi)\) is independent of \(\phi\) within the solid angle covered by the Sun. Applying the correct angular distribution does not give results that are noticeably different from those obtained with the delta function (pure radial) photon distribution. Indeed, it should be the case since in the energy range under consideration, \(\gamma_e \gg 1\), and the ambient photon angular distribution can be approximated by the delta function.

We also discovered a numerical error in the code that affects the results below \(\sim 1\) GeV, especially in case of small \(\theta\). Figures 3 and 4 show the corrected integral and differential intensities. Table 1 shows the corrected all-sky average integral intensities.

The 68\% containment radius of the EGRET point-spread function is \(\sim 6\) at 100 MeV. For \(\theta < 6\), the corrected integral flux is \(F_e(>100\text{ MeV}) \sim (2.0\text{--}4.3) \times 10^{-7} \text{ cm}^{-2} \text{ s}^{-1}\), where the given range corresponds to different modulation levels (\(\Phi_p = 1000\text{--}500\text{ MV}\)).

**TABLE 1**

| \(E\)       | \(\Phi_p = 0\) | 500 MV  | 1000 MV |
|-------------|----------------|---------|---------|
| \(>10\text{ MeV}\) | 7.1            | 6.5     | 6.0     |
| \(>100\text{ MeV}\) | 1.3            | 1.2     | 1.1     |
| \(>1\text{ GeV}\)   | 0.14           | 0.13    | 0.11    |

*Note: Units are \(10^{-6} \text{ cm}^{-2} \text{ s}^{-1} \text{ sr}^{-1}\).*