

Correction to "Phase-space electron holes along magnetic field lines" by L. Muschietti, R.E. Ergun, I. Roth, and C.W. Carlson

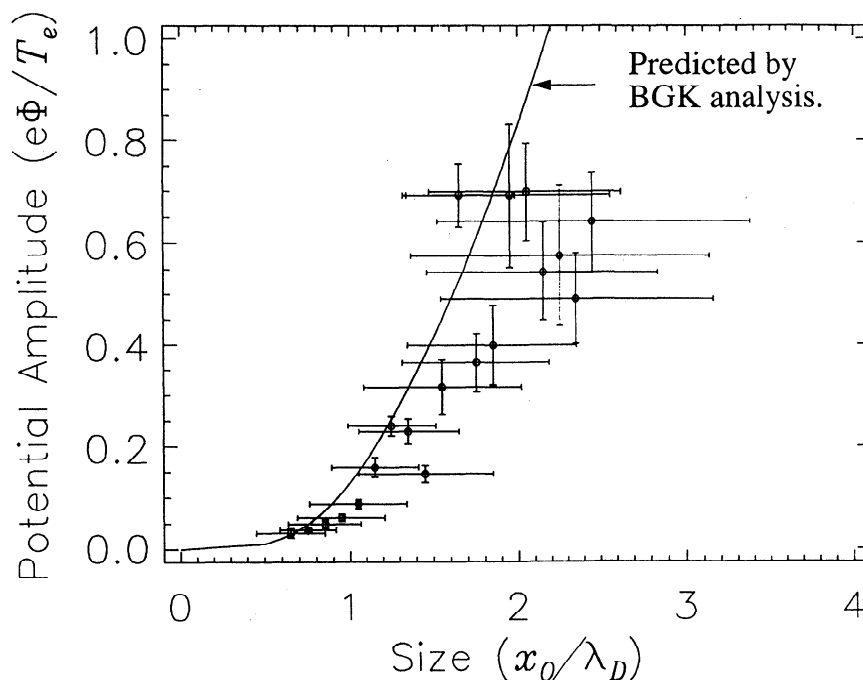
In the article "Phase-space electron holes along magnetic field lines" (Geophysical Research Letters, 26 (8), 1093–1096, 1999) a factor 2 was overlooked. Equation (1) should read

$$g(\phi) \equiv \int_{-\phi}^0 \frac{f_i(w)}{\sqrt{w+\phi}} dw = \frac{1}{2} \frac{d^2 \phi}{dx^2} - \int_0^\infty \frac{f_e(w)}{\sqrt{w+\phi}} dw + 1. \quad (1)$$

In order to maintain the form of the subsequent equations (5) and (7) as they appear in the article, we redefine here the width δ of the potential profile parallel to the magnetic field and change Equation (3) as follows

$$\phi(x) = \psi \exp(-x^2/\delta^2). \quad (3)$$

Figure 2 is affected by the change, which shifts the solid curve predicted by the BGK analysis. It is shown below with the correction included. The correction, in fact, improves the agreement of the BGK theory with the data, and strengthens the case made in the article that the fast-moving potential spikes observed by satellites "are in many aspects consistent with the picture of a phase-space electron hole carried by a drifting electron population".



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