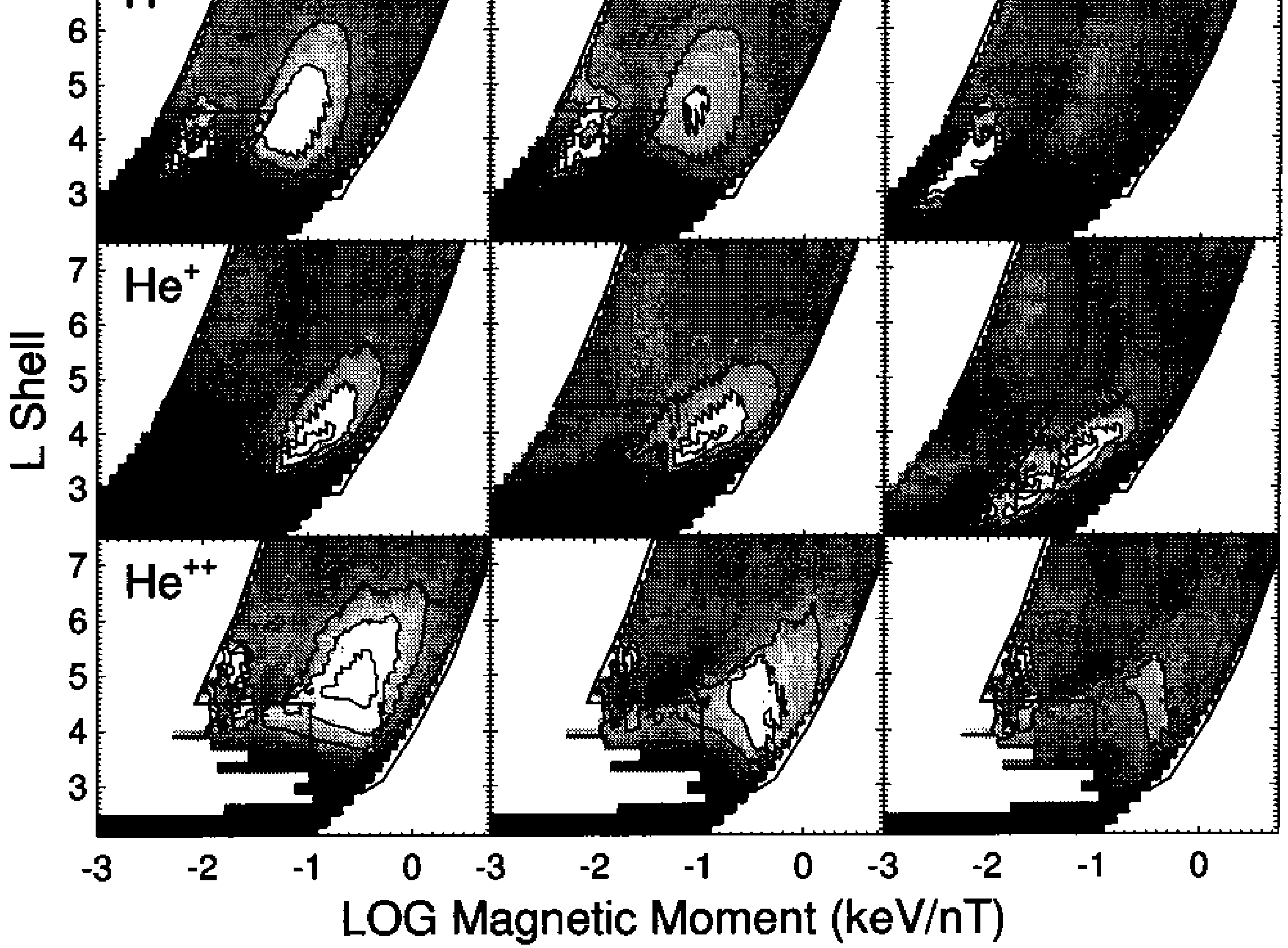

Figure 2. Logarithms of the phase space density ratio of data/model for fit 0, fit 1, and fit 2 in columns 1–3, respectively. The range of intensities displayed is logarithmic $10^{-1.5}$(white)–$10^{1.5}$(black) with contours every half-decade. Perfect agreement contour is shown dotted. Solid line outlines fitting region as in Figure 1.

The value for χ^2 should be taken as a relative measure of the "sharpness" of the χ^2 minimum, and not as confidence limits, both because χ^2 was evaluated with equal weights for each point and because deviations from the fit were not normally distributed. Nonetheless, the value of D^E is well constrained by the data, and also within the range of previous measurements [*West et al.*, 1981], though about three times larger than the value of $2.3\times10^{-15} R_E{}^2$/s used by [*Spjeldvik*, 1977].

Fit 1: External Source With Stall Correction

We began with externally driven electric field fluctuations as before, $D^E \propto L^6$, but included the effect of the corotation $\vec{E} \times \vec{B}$ drift on the drift frequency, as well as our formulation for the electric diffusion coefficient (equation (18)). Since the electric field shielding has an expected time constant, $0.5<\tau<3$ hours, [*Vasyliunas*, 1972; *Kaye and Kivelson*, 1981; *Anderson et al.*, 1991], we assumed no additional radial dependence in the amplitudes, fixing q, L_0 and p, but fitting the spectral coefficients n, above and m, below Ω_E. Thus we made a four parameter fit, holding other parame at fit 0 values, and found a 25% improvement in χ^2.

In Figure 1 the second and third columns show the mo fied and standard diffusion coefficients from fit 6 and re ence models, respectively. The narrow feature in the seco column follows the "stall" energy of the ions, where we h included only the corotation electric field and neglected convection electric field contribution. In more realistic el tric and magnetic field models, which produce radial dr not included here, the ion drift velocity does not decrease zero but merely passes through a minimum at this locati In both cases the drift frequency is reduced which result less diffusion if there is reduced power at lower frequenc

We plot the logarithm of the ratio of data to the mode column 2 of Figure 2. We see that the major effect of new transport coefficient is to produce better agreemen lower L shells than seen in the reference model. In particu we reproduce the "peninsula" of diffusing protons abov keV/nT very well. The over prediction of the model "wh spot" near 1 keV/nT and $L\sim5$ has improved only sligh