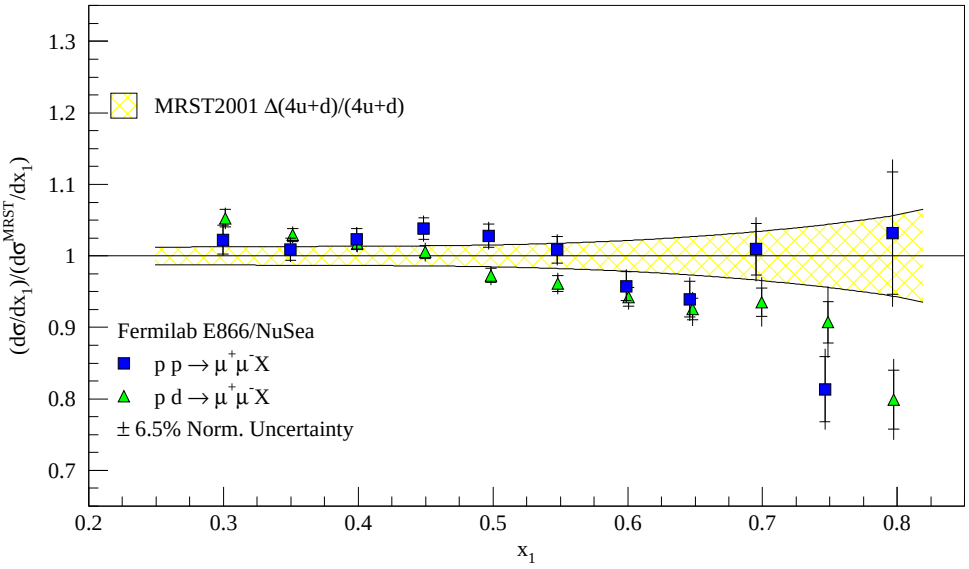

FIG. III.14 (Color online) Ratios of the measured Drell-Yan $p\,p$ (squares) and $p\,d$ (triangles) cross-sections to NLO calculations based on the MRST 2001 PDF fit (Martin *et al.*, 2002a), plotted as a function of beam momentum fraction, here labeled x_1, with averaging over the target momentum fraction. The shaded area between the solid lines represents the experimental uncertainty ranges (Martin *et al.*, 2003) on $4u(x) + d(x)$ in the MRST 2001 PDF fit. The data are from the FNAL E866 experiment. [Figure adapted from (Webb, 2003; Webb *et al.*, 2003).]

sections that are primarily sensitive to the valence distributions in the proton beam, and the antiquark distributions at small x_t in the proton and deuteron targets.

Some results from analysis of the FNAL E866 Drell-Yan data are reproduced in Fig. III.14. In this figure the E866 results for $p\,p$ and $p\,d$ collisions are divided by the appropriate differential cross-section computed using the MRST 2001 PDFs (Martin *et al.*, 2002a). Analogous ratios plotted as a function of x_t (Webb *et al.*, 2003) indicate that the MRST 2001 PDFs provide a very good description of the $p\,p$ cross-section's x_t-dependence on the complete x_t-domain, and a good description of the $p\,d$ cross-section for $x_t < 0.15$. In this light, consider first the $p\,p$ data, which hints that the plotted ratio is smaller than one at $x_b \gtrsim 0.6$. Given that the u-quark is responsible for roughly 80% of the cross-section, this observation can be interpreted as an indication that the MRST 2001 PDFs overestimate the proton's valence u-quark distribution. There is a strong signal from the $p\,d$ cross-section that the plotted ratio is less than unity for $x_b \gtrsim 0.5$. Given that this cross-section is proportional to $4u(x) + d(x)$ and the greater suppression, one can argue that the PDFs overestimate the