



Figure 14: The distribution of the three-jet invariant mass versus the top quark mass obtained from the $D\bar{\nu}$ lepton + 4 jet sample. Figures a) and b) show the results of the standard and "loose" selection, respectively. Figures c) and d) show the likelihood distribution for fits of the mass distributions to a combination of signal and background terms.

on the top quark cross section and mass, and will simultaneously allow additional studies that will help to reduce the systematic uncertainties in these measurements.

The top quark system is itself a probe into the physics of the standard model. With the anticipated size of the Tevatron data samples, it will be possible to measure the branching fraction $t \rightarrow W^+b$, which is expected to saturate the top quark width, and place constraints on other decay modes such as $t \rightarrow b\tau\nu_\tau$. The top quark is also a probe into physics beyond the standard model [24]. A number of theoretical extensions to the standard model can be tested by detailed studies of the $t\bar{t}$ system.