



FIG. 9. The time dependence of electron collisions following a 500 keV electron beam pulse (5-ns FWHM) in an Ar/Kr/F<sub>2</sub> = 90/10/0.25 mixture. (top) Ionization and attachment events in a 1-atm mixture. Attachment cross sections are important only for  $\epsilon < 2$  eV. Since thermalization is slow once electrons fall below the electronic thresholds of the buffer gas, there is a disparity in time between when ionizations and attachments occur. (bottom) Ionization events at pressures of 1, 2, and 6 atm. The e-beam response time at 6 atm is sufficiently small that ionizations track the e-beam current.

FIG. 6. The electron spectrum as a function of energy and time ( $\text{eV}^{-1} \text{ s}^{-1}$ ) for a 500-keV e-beam pulse (5-ns FWHM) slowing in a 1-atm Ar/Kr/F<sub>2</sub> = 90/10/0.25 mixture; (a)  $0 < \epsilon < 200$  eV, and (b)  $0 < \epsilon < 30$  eV. The time dependence of the e-beam pulse is at the bottom right in each figure. The e-beam response time for these conditions is  $\approx 20$  ns. Note the transition to thermalization at 20–30 ns.