17.5 Conclusion

We have reviewed a number of possible device applications of hot electrons in semiconductors. The wide class of hot-electron devices were classified into two groups, the ballistic devices and the quasi-thermal (T_e) devices, depending on the type of a hot-electron ensemble essentially employed in their operation. At this time, the quasi-thermal group appears more promising for applications, if only because the corresponding nonequilibrium electronic ensemble is easier to maintain in a robust and reproducible fashion. Indeed, modern electronic devices operate typically with the concentration of carriers in the active region exceeding 10^{17} cm^{-3}. In this case, the electron-electron interaction is very fast, dominating most other scattering and transport properties and maintaining a well defined effective temperature T_e.