form continuous functions except at the origin $x = 0$ and are of a finite discontinuity, therefore. Under these settings, we may benefit from the well-known definitions associated with the Dirac delta distributions (cf., e.g., equations (4) and (5) of [36]). That is, if $U(x)$ is a discontinuous function of x then the distributions $U(x)\,\delta(x)$ and $U(x)\,\delta'(x)$ can be rewritten as

$$U(x)\,\delta(x) = U(0)\,\delta(x)\,, \tag{11}$$

$$U(x)\,\delta'(x) = U(0)\,\delta'(x) - U'(0)\,\delta(x)\,. \tag{12}$$

Which would imply (with $U(x) = f'(h(x))\,/\,f(h(x))^2$) that the effective potential in (9) can be recast as

$$V_{eff}\,(q(x)) = G_1 U(0)\,\delta'(x) + (2G_1 - G_2)\,\frac{f'(h(x))^2}{f(h(x))^3}\,\delta(x)^2\,. \tag{13}$$

To avoid the physical and/or mathematical meaninglessness of $\delta(x)^2$, two feasible solutions for (13) obtain. The simplest of which is achieved by taking $G_1 = 0$ and $G_2 = 0$ (i.e., Mustafa and Mazharimousavi's [10], MM-, ordering ambiguity parameters $\alpha = \gamma = -1/4$ and $\beta = -1/2$ here, where no other known-ordering in the literature may satisfy the $G_1 = 0 = G_2$ condition). In this case, the position-dependent-particle at hand (2) remains free and admits a free-particle solution, therefore. However, the triviality of such a choice (i.e., $G_1 = 0 = G_2$) inspires the search for yet another feasible solution for (13) where $G_1 \neq 0$ (i.e., $\beta \neq -1/2$).

If we just recollect that $\alpha + \beta + \gamma = -1$ (i.e., the von Ross constraint) and impose the continuity conditions at the abrupt heterojunction boundaries (i.e., simply the ordering ambiguity parameters α and γ are related through $\alpha = \gamma$, a manifesto that ensures the continuity of $m(x)^{\alpha}\,\psi(x)$ and $m(x)^{\alpha+\beta}\,[\partial_x \psi(x)]$ at the heterojunction boundary) along with the choice of $(2G_1 - G_2) = 0$, we