(3.1.13)

$$\Delta Q_{ch(y)} = \frac{V_{F(y)}}{Vb} Q_{chs0}$$

where $V_b = (V_{gsteff} + n*v_t)/A_{bulk}$. In order to remove any association between the variable n and bias dependencies (V_{gsteff}) as well as to ensure more precise modeling of Eq. (3.1.8) for linear regimes (under subthreshold conditions), n is replaced by 2. The expression for V_b now becomes

(3.1.14)

$$V_b = \frac{V_{gsteff} + 2v_t}{A_{bulk}}$$

A unified expression for $Q_{ch}(y)$ from subthreshold to strong inversion regimes is now at hand

(3.1.15)

$$Q_{ch(y)} = Q_{chs0}(1 - \frac{V_{F(y)}}{V_b})$$

The variable Q_{chs0} is given by Eq. (3.1.4).

3.2 Unified Mobility Expression

Unified mobility model based on the V_{gsteff} expression of Eq. 3.1.3 is described in the following.

