Anti-roll bar equation:

$$\frac{d\theta}{dt} = \mathbf{1/l_b \cdot [\, w_{r1} - p \cdot l_y - p \cdot l_c + q \cdot l_x - w \,] - 1/l_b \cdot [\, w_{r2} + p \cdot l_y + p \cdot l_c + q \cdot l_x - w \,]}$$

Front right unsprung mass vertical movement (wheel number one):

$$m_{ns1} \cdot w_{r1} = m_{ns1} \cdot g + k_{n1} \cdot x_{n1} - k_{s1} \cdot x_{s1} - r_{s1} \cdot [w_{r1} + q \cdot x_1 - p \cdot y_1 - w] \mathbf{- 1/l_b \cdot [} \frac{d\theta}{dt} \mathbf{\cdot r_{12}} + \theta \mathbf{\cdot k_{12} \,]}$$

Front left unsprung mass vertical movement (wheel number two):

$$m_{ns2} \cdot w_{r2} = m_{ns2} \cdot g + k_{n2} \cdot x_{n2} - k_{s2} \cdot x_{s2} - r_{s2} \cdot [w_{r2} + q \cdot x_2 - p \cdot y_2 - w] \mathbf{+ 1/l_b \cdot [} \frac{d\theta}{dt} \mathbf{\cdot r_{12}} + \theta \mathbf{\cdot k_{12} \,]}$$

Sprung mass roll movement:

$Ip \cdot p = \Sigma$ (torques from vertical forces at the unsprung masses) $- \Sigma$ (torques from transversal forces at the unsprung masses) $+ Iq \cdot q \cdot r - Iz \cdot q \cdot r \mathbf{+ [\, 2/l_b \cdot (\, l_y + l_c \,) \,] \cdot [} \frac{d\theta}{dt} \mathbf{\cdot r_{12} + \cdot k_{12} \,]}$

Sprung mass vertical movement:

$m_s \cdot w = m_s \cdot g +$ (vertical forces at the unsprung masses) $+ m_s \cdot u \cdot q - m_s \cdot v \cdot p \mathbf{+ [\, 2\, l_y / l_b \,] \cdot [} \frac{d\theta}{dt} \mathbf{\cdot r_{12}} + \theta \mathbf{\cdot k_{12} \,]}$