

$$\dot{r}_i = a_{i-1}^r r_{i-1} - (a_i^r + b_{i-1}^r + c_i^r) r_i + b_i^r r_{i+1} + d_i^r r_i^*$$

$$\dot{r}_i^* = c_i^r r_i - d_i^r r_i^*$$

$$\dot{p}_i = a_{i-1}^p p_{i-1} - (a_i^p + b_{i-1}^p + c_i^p) p_i + b_i^p p_{i+1} + d_i^p p_i^*$$

$$\dot{p}_i^* = c_i^p p_i - d_i^p p_i^* + t_i r_i^* - l_i p_i^*$$