Start with Eqn 69 in the manuscript

$$\frac{dB_j}{dt} = \sum_i \dot{B}_{ij} - \dot{B}_j - \dot{B}_{j1} + \dot{Q}_{j1} \quad (1)$$

$$\frac{dB_j}{dt} = \frac{dL_j}{dt} \quad (2) \qquad \dot{B} = \dot{S} + \dot{L} + \dot{R} \quad (3)$$

$$\frac{dL_j}{dt} = \sum_i \left(\cancel{\dot{S}_{ij}} + \dot{L}_{ij} + \dot{R}_{ij}\right) - \left(\dot{S}_j + \dot{L}_j + \dot{R}_j\right) - \left(\cancel{\dot{S}_{j1}} + \dot{L}_{j1} + \dot{R}_{j1}\right) + \dot{Q}_{j1} \quad (4)$$

Apply $\sum_i \dot{S}_{ij} = \dot{S}_{j1}$ (5)

$$\boxed{\frac{dL_j}{dt} = \sum_i \left(\dot{L}_{ij} + \dot{R}_{ij}\right) - \left(\dot{S}_j + \dot{L}_j + \dot{R}_j\right) - \left(\dot{L}_{j1} + \dot{R}_{j1}\right) + \dot{Q}_{j1}} \quad (6)$$

(6) is the equivalent of (69) using SLERT

Rearrange

$$\boxed{\dot{S}_j + \dot{L}_j + \dot{R}_j = \sum_i \left(\dot{L}_{ij} + \dot{R}_{ij}\right) - \frac{dL_j}{dt} - \left(\dot{L}_{j1} + \dot{R}_{j1}\right) + \dot{Q}_{j1}} \quad (7)$$

(7) is the equivalent of (68) using SLERT