

# Bounded Linear Logic in a Semiring

**Given:**  $(R, 1, *, 0, +)$

$$\frac{\Gamma_1, \Gamma_2 \vdash B}{\Gamma_1, A \odot 0, \Gamma_2 \vdash B} \quad W$$

$$\frac{\Gamma_1, A \odot r_1, A \odot r_2, \Gamma_2 \vdash B}{\Gamma_1, A \odot (r_1 + r_2), \Gamma_2 \vdash B} \quad C$$

**Graded comonads generalize the modality in bounded linear logic to use bounded semiring data-usage annotations.**