# A Weighted hypergraph $\lambda''$ $\lambda'$ $\lambda'$

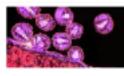


# Heterogeneous transmission settings

## JAMA Insights

## Indoor Air Changes and Potential Implications for SARS-CoV-2 Transmission

Joseph G. Allen, DSc, MPH; Andrew M. Ibrahim, MD, MSc



# Medical Virology

REVIEW 🙃 Open Access 🐵 🕦



### Behaviour of aerosols and their role in the transmission of SARS-CoV-2; a scoping review

José Miguel Robles-Romero, Gloria Conde-Guillén, Juan Carlos Safont-Montes. Francisca María García-Padilla 🐼 Macarena Romero-Martín



REVIEW

## Inactivation of influenza A viruses in the environment and modes of transmission: A critical review

Thomas P. Weber a,\*, Nikolaos I. Stilianakis a,b

Behavioral Ecology (2001), 31(5), 651-660. doi:10.1095/behecs/acus002

#### Original Article

Sex, synchrony, and skin contact: integrating multiple behaviors to assess pathogen transmission risk

Stephan T. Leu\*, Pratha Sah, Ewa Krzyszczyk, Ann-Marie Jacoby, Janet Mann, and Shweta Bansal

Notation:  $\lambda = \beta$ .

We include context by allowing each group to have an individual  $\beta$ drawn from a density  $f(\beta|n)$ .

The context of contacts matters for transmission

> COVID-19

⊳ Influenza A

> STIs

What are the possible effects of ignoring context?

## Heterogeneous transmission settings

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- **>** ...

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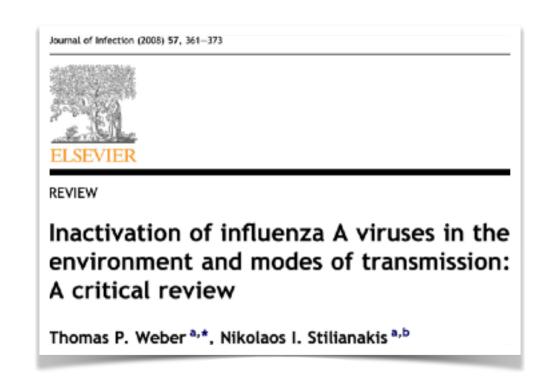


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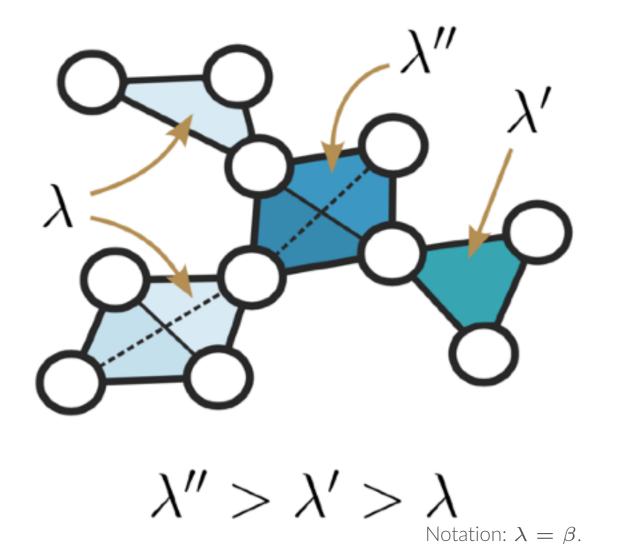
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## A Weighted hypergraph



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Detailled description of the dynamics at the groups level with  $\Theta_{n,i,\beta} = i\beta$  ("simple contagion")

$$\frac{\mathrm{d}G_{n,i}^{\beta}}{\mathrm{d}t} = \mu(i+1)G_{n,i+1}^{\beta} - \mu iG_{n,i}^{\beta} + (n-i+1)[(i-1)\beta + \rho]G_{n,i-1}^{\beta} - (n-i)[i\beta + \rho]G_{n,i}^{\beta}$$