# My awesome title

Incredible scientist

Terribly long department name with way too many words

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# Equation format

- Matrices in uppercase and bold
- Vectors in lowercase and bold
- Scalars lowercase and unbolded
- Parenthesis order $[\{()\}]$

# Equation format

$$\eta_{ij} = \beta_{0j} + \mathbf{u}_i^\top \boldsymbol{\gamma} \tag{1}$$

$\mathbf{u}_i$ the score of site $i = 1 \dots n$ and $\boldsymbol{\gamma}_j$ the loading for species $j = 1 \dots m$

or

$$\boldsymbol{\eta} = \mathbf{1}^\top \boldsymbol{\beta}_0 + \mathbf{U}\boldsymbol{\Gamma}^\top \tag{2}$$

where $\mathbf{U}$ is a $n \times d$ matrix of latent variables and $\boldsymbol{\Gamma}$ is a $m \times d$ matrix of loadings.

note that lowercase bolded $\eta$ an exception to the aforementioned format

# Latent variables

- $\mathbf{u}_i = \boldsymbol{\epsilon}_i$ is an unconstrained or residual LV
- $\mathbf{u}_i = \mathbf{B}^\top \mathbf{x}_i^{lv}$ is a constrained LV
- $\mathbf{u}_i = \mathbf{B}^\top \mathbf{x}_i + \boldsymbol{\epsilon}_i$ is an informed LV

# Design matrices

- $\mathbf{X}$ for `formula`
- $\mathbf{X}^{lv}$ for `lv.formula`
- $\mathbf{X}^{r}$ for `row.eff`

and similarly with $\mathbf{Z}$ for random effect design matrices.