- Linear Mixed Effect Model all variances and covariances of random effects and all expected values must be specified.

- Model: $y = X\beta + Zu + e$ → random; Zu → random; y → random; $X\beta$ → fixed

$$E[\beta] = \beta$$

$$var[\beta] = \emptyset$$

Breeding values u are defined as deviations

$$\Rightarrow E[u] = \emptyset \rightarrow \begin{bmatrix} \emptyset \\ \vdots \\ \emptyset \end{bmatrix}$$

vector $u = \begin{bmatrix} u_1 \\ \vdots \\ u_{27} \end{bmatrix}$

- Residuals are also deviations

$$\Rightarrow E[e] = \emptyset$$

$$\Rightarrow E[y] = E[X\beta + Zu + e] = E[X\beta] + E[Zu] + E[e]$$

$$= XE[\beta] + ZE[u] + E[e]$$

$$= X\beta + Z\emptyset + \emptyset = X\beta$$