



# Normal Differential Mutual Information

## 1 Why

What is the differential mutual information between two components of a multivariate normal.

## 2 Result

**Proposition 1.** *Let  $g \sim \mathcal{N}(\mu, \Sigma)$ . Then the mutual information between component  $i$  and component  $j$  is*

$$-\frac{1}{2} \ln(1 - \rho_{ij}^2)$$

*where  $\rho_{ij}$  is the correlation between components  $i$  and  $j$ .*