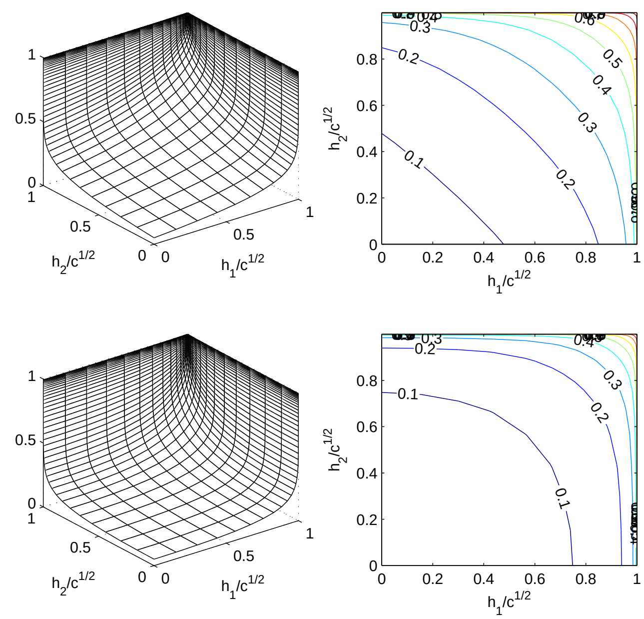

Figure 1: The power envelopes $\beta_\lambda(h)$ (upper panel) and $\beta_\mu(h)$ (lower panel) for $\alpha = 0.05$, as functions of $h/\sqrt{c} = (h_1, h_2)/\sqrt{c}$.

Proposition 4 *Let* Φ *denote the standard normal distribution function. Then,*

$$\beta_\lambda(h) \;=\; 1-\Phi\left[\Phi^{-1}(1-\alpha)-\sqrt{-\frac{1}{2}\sum_{i,j=1}^{r}\ln\left(1-\frac{h_ih_j}{c}\right)}\right] \quad \textit{and} \tag{14}$$

$$\beta_\mu(h) \;=\; 1-\Phi\left[\Phi^{-1}(1-\alpha)-\sqrt{-\frac{1}{2}\sum_{i,j=1}^{r}\left(\ln\left(1-\frac{h_ih_j}{c}\right)+\frac{h_ih_j}{c}\right)}\right]. \tag{15}$$

Figure 1 shows the asymptotic power envelopes $\beta_\lambda(h)$ and $\beta_\mu(h)$ as functions of $h_1/\sqrt{c}$ and $h_2/\sqrt{c}$ when $h = (h_1, h_2)$ is two-dimensional.

It is important to realize that the asymptotic power envelopes derived in Proposition 4 are valid not only for λ- and μ-based tests but also for any test invariant under left orthogonal transformations of the observations ($X \mapsto QX$, where Q is a $p \times p$ orthogonal matrix), and for any test invariant under multiplication by any non-zero constant and left orthogonal transformations of the observations ($X \mapsto aQX$, where $a \in \mathbb{R}_0^+$ and Q is a $p \times p$ orthogonal matrix), respectively.