Convergence of the MLE

Some more theorems about convergence

Continuous mapping theorem:

Slutsky's theorem:

Convergence of the MLE

Intermediate steps

Using results we have previously derived, argue that:

$$rac{1}{n}\ell^{''}(heta|\mathbf{Y})\stackrel{p}{
ightarrow} -\mathcal{I}_1(heta)$$

$$egin{array}{cccc} lacksquare & rac{1}{n}\ell''(heta|\mathbf{Y}) \stackrel{p}{
ightarrow} -\mathcal{I}_1(heta) \ & lacksquare & rac{1}{\sqrt{n}}\ell'(heta|\mathbf{Y}) \stackrel{d}{
ightarrow} N(0,\mathcal{I}_1(heta)) \end{array}$$

Regularity conditions