

Listing 1. Example of code that fit the AB curve to the data of one subject

a- The data; in the first columns are the lags, in the second, the performance $T_2|T_1$

```
data = {0.82, 0.54, 0.76, 0.72, 0.83, 0.82, 0.86, 0.90};
```

b- Defining the AB function as a function of lag x

```
p[x_, {λ_, β_, γ_, δ_}] := δ (1 - e-(Log[x-1+λ Exp[β]]-β)2) + γ
```

c- Defining the log likelihood of the data give a parameter set θ

```
LL[data_, θ_] :=  $\sum_{i=1}^{\text{Length}[\text{data}]}$  (data[[i]] Log[p[i, θ]] + (1 - data[[i]]) Log[1 - p[i, θ]])
```

d- Heuristic value for γ and δ

```
lo = Min[data];  
hi = Max[data] - lo;
```

e-Finding the best fit by Maximizing LL

```
NMaximize[{  
  (*objective function*) LL[data, {λ, β, γ, δ}],  
  (*constraints *) 0 ≤ γ ≤ 1 && 0 ≤ δ ≤ 1 && 0 ≤ γ + δ ≤ 1 && 0 ≤ λ ≤ 1 && β > -0.3  
},  
{λ, 0.1, 0.9},  
{β, 0, 1},  
{γ, lo - 0.01, lo + 0.01},  
{δ, hi - 0.01, hi + 0.01}}  
]  
{-3.99412, {β → 0.0858893, γ → 0.551678, δ → 0.323694, λ → 0.269369}}
```