# Output: MCSLinv

```
countDat = Import[NotebookDirectory[], "MCSLoutput.csv"]; (* Edit here! *)

{a, b, c, ηaMean, μtMean} = Part[countDat, -5 ;; -1];
```

These two functions convert between $\eta$a, $\mu$t space and $\mu$s, $\mu$a space.

```
μtηaToAS[point_] := Module[{μt, ηa} = point;
  {(1 - ηa) * μt, ηa μt}]

μtηaToASinv[point_] := Module[{μs, μa} = point;
  {μs + μa, μa / (μs + μa)}]

style[str_] := Style[str, Black, Bold, 14, FontFamily → "Helvetica"]

{μsMean, μaMean} = μtηaToAS[{μtMean, ηaMean}] // Flatten;

pointText = StringForm["(``, ``)", NumberForm[μsMean, 3], NumberForm[μaMean, 3]];

logLik[point_] := Module[{μt, ηa} = point;
  a (ηa - ηaMean)^2 / 2 + b (ηa - ηaMean) (μt - μtMean) + c (μt - μtMean)^2 / 2]
```

Set the confidence interval:

```
p = .95; (* Edit here! *)

χ2 = 0.5 x /. FindRoot[CDF[ChiSquareDistribution[2], x] == p, {x, 1}];

ellipse = Show[ContourPlot[-logLik[μtηaToASinv[{μs, μa}]] == χ2,
    {μs, μsMean * 0.95, μsMean * 1.05}, {μa, μaMean * 0.95, μaMean * 1.05},
    ContourStyle → Blue, PlotLabel → style[pointText]],
  ListPlot[{{μsMean, μaMean}}, PlotStyle → Blue], AspectRatio → 0.6,
  Frame → True, FrameStyle → Directive[Thick, Black, Bold, 12],
  FrameLabel → {"μs (mm^-1)", "μa (mm^-1)"}]
```