# Simulation of Nd-Fractionation A

File: simulRR.mcd

## Raw data

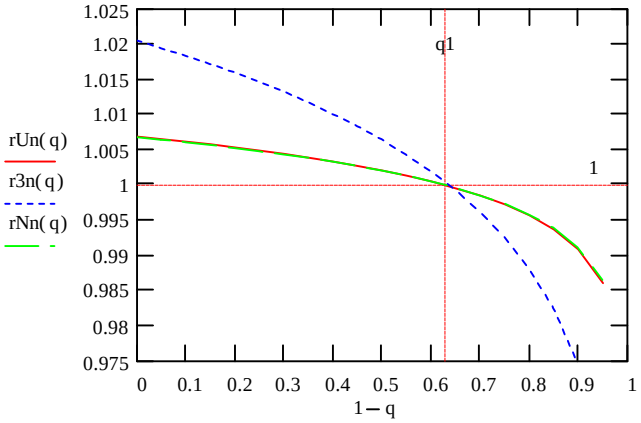
$RU := 1.14179$ $R3 := \frac{1}{0.236421}$ $RN := \frac{1}{0.7219}$ $R3 = 4.22974$ $RN = 1.385233$ $q := 1, 0.95 .. 0.05$

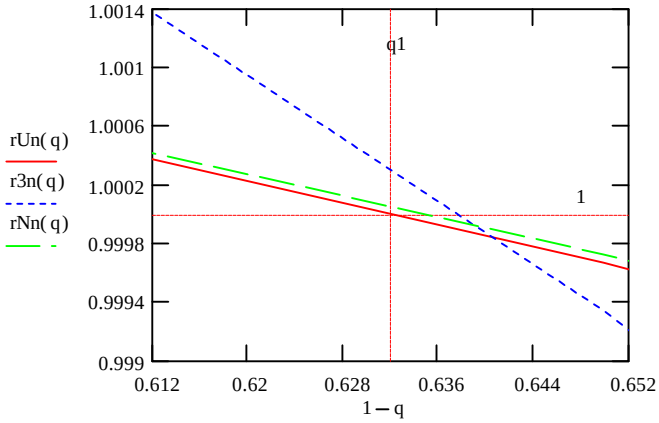
$\beta U := \sqrt{\frac{144}{142}}$ $\beta 3 := \sqrt{\frac{150}{144}}$ $\beta N := \sqrt{\frac{146}{144}}$ $XU := \frac{\beta U - 1}{\beta U}$ $XN := \frac{\beta U \cdot \beta N - 1}{\beta U \cdot \beta N}$ $X3 := \frac{\beta U \cdot \beta 3 - 1}{\beta U \cdot \beta 3}$

## Emission profiles follow the Rayleigh distillation law:

$rU(q) := RU \cdot \beta U \cdot q^{XU}$ $r3(q) := R3 \cdot \frac{RU}{rU(q)} \cdot \beta U \cdot \beta 3 \cdot q^{X3}$ $rN(q) := RN \cdot \frac{RU}{rU(q)} \cdot \beta U \cdot \beta N \cdot q^{XN}$ $q1 := 1 - \frac{1}{e}$

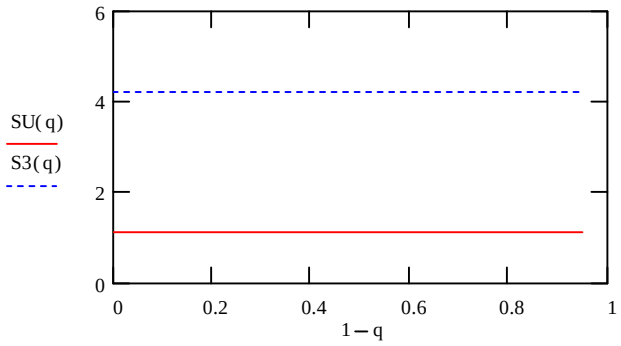
$rUn(q) := \frac{rU(q)}{RU}$ $r3n(q) := \frac{r3(q)}{R3}$ $rNn(q) := \frac{rN(q)}{RN}$ $qa := q1 - 0.02$ $qe := q1 + 0.02$

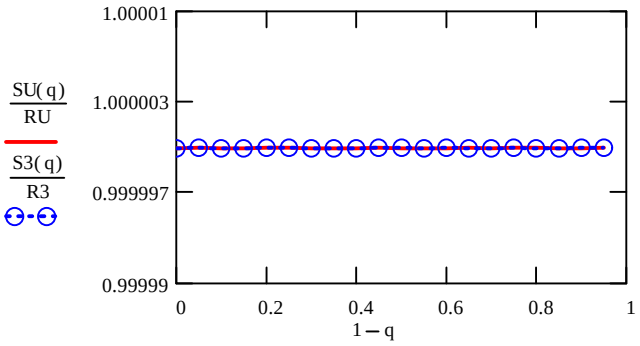


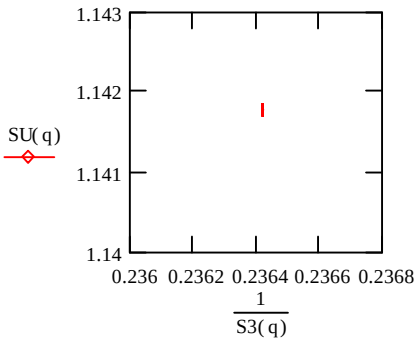




## Fractionation correction, using Rayleigh law algorithms:

$E3 := \frac{\beta N}{\beta 3} \cdot \frac{(\beta 3 - 1)}{(\beta N - 1)}$ $EU := \frac{\beta N \cdot (\beta U - 1)}{\beta N - 1}$ $S3(q) := r3(q) \cdot \frac{\beta N^{E3}}{\beta 3} \cdot \left( \frac{RN}{rN(q)} \right)^{E3}$ $SU(q) := rU(q) \cdot \frac{\beta N^{EU}}{\beta U} \cdot \left( \frac{RN}{rN(q)} \right)^{EU}$




There is **no** residual correlation.
(all corrected data fall into one point).
**The fractionation corrected ratios are:**

$SU(1) = 1.14179$

$\frac{1}{S3(1)} = 0.236421$