





Fig. 4 – Bos & Wallinga (2012)





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Fig. 4 – Bos & Wallinga (2012)





Fig. 4 – Bos & Wallinga (2012)





Histogram



Histogram



No L_x curves detected

No T_x curves detected



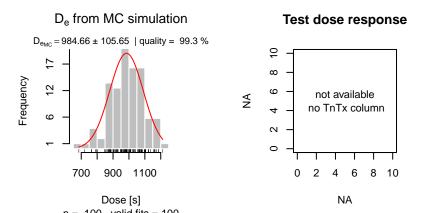
Density: g-values (%/decade)



Growth curve

 $D_e = 977.38 \pm 105.65$ | fit: EXP







Χ

LxTxData\$Dose







RLum.Data.Image



OSL (UVVIS)



RLum.Data.Spectrum





















































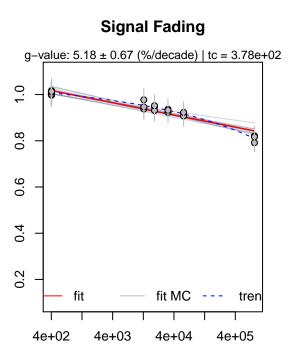




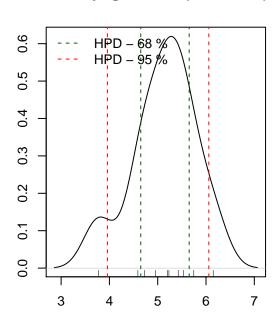


No L_x curves detected

No $T_{\boldsymbol{x}}$ curves detected



Density: g-values (%/decade)



IR-RF $D_e = 623.25 [600.63; 635.8]$ RF_nat + RF_reg 2.0e+03 IR-RF [cts/1.3 s] 1.8e + 031.6e + 031.4e+03Ш 100 200 300 400 500 600 700 0

Time [s]

IR-RF $D_e = 610.17 [567.19; 653.15]$ RF_nat + RF_reg 2.0e+03 IR-RF [cts/1.3 s] 1.6e + 031.4e+03Ш 610.17 600 0 100 200 300 400 500 700 Time [s]



Growth curve

 $D_e = 1668.25 \pm 49.22$ | fit: EXP













TL pseudoIRSL1 pseudoIRSL2



T [°C]

help("analyse_pIRIRSequence")





T [°C]





D_e from MC simulation



Test dose response



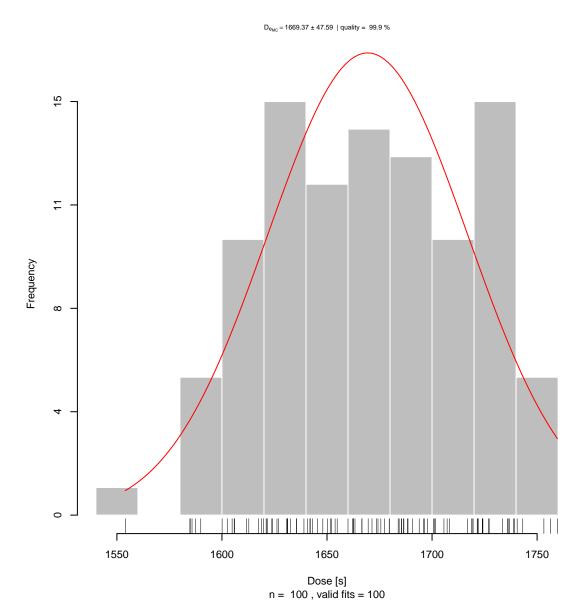




 $D_e = 1668.25 \pm 47.59$ | fit: EXP



$\ensuremath{D_{e}}$ from MC simulation





Summarised Dose Response Curves



Sensitivity change



Rejection criteria



USER combined



IRSL combined



OSL combined





OSL



OSL



OSL



Monte Carlo Simulation

$$n = |\hat{\mu} = 43|\hat{\sigma} = 20|\frac{\hat{\sigma}}{\sqrt{n}} = 2|v = 0.73$$





D_e distribution





Standardised estimate



Profile log likelihood for σ_{OD}



Fast Ratio







Fuchs & Lang (2001)







No L_x curves detected

No T_x curves detected



Density: g-values (%/decade)



Measured dose response curve

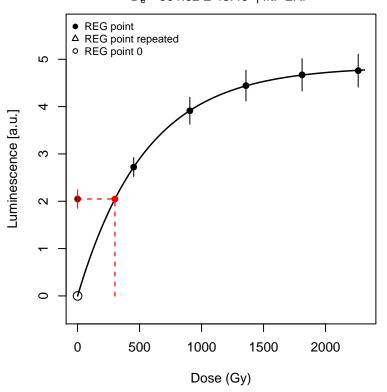
 $D_e = 130.97 \pm 17.12$ | fit: EXP

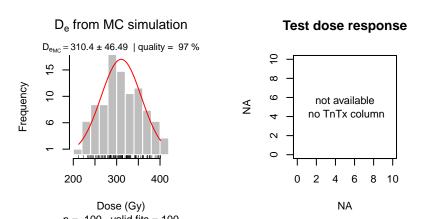




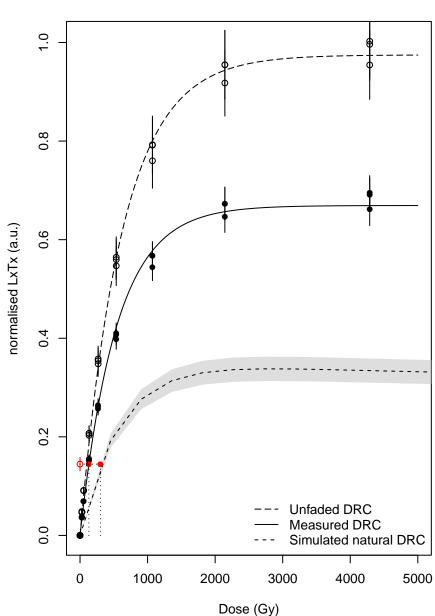
Simulated dose response curve

 $D_e = 301.32 \pm 46.49$ | fit: EXP





Dose response curves



 $\dot{D} = 7 \pm 0 \frac{Gy}{ka}$

 $\dot{D}_{Reader} = 0.134 \pm 0.007$

 $\log_{10} (\rho') = -5.42 \pm 0.09$

 $\left(\frac{n}{N}\right) = 0.14 \pm 0.02$ $\left(\frac{n}{N}\right) = 0.35 \pm 0.06$

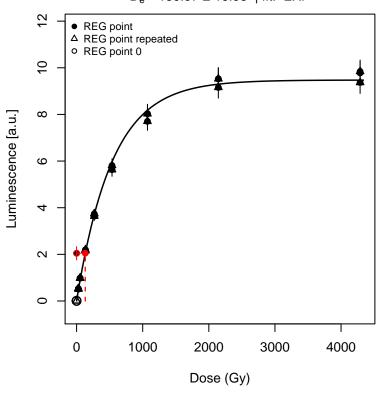
 $D_{E,sim} = 301.32 \pm 46.49 \text{ Gy}$

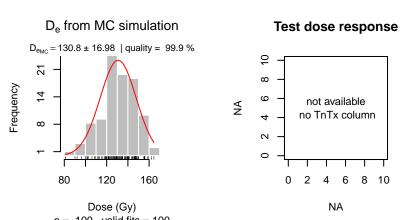
 $D_{0.sim} = 548.27 \pm 74.3 \text{ Gy}$

Age_{sim} = 43.05 ± 6.98 ka

Measured dose response curve

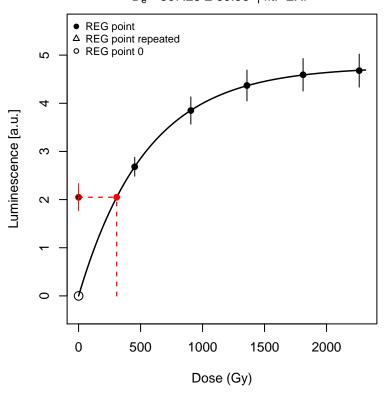
 $D_e = 130.97 \pm 16.98$ | fit: EXP

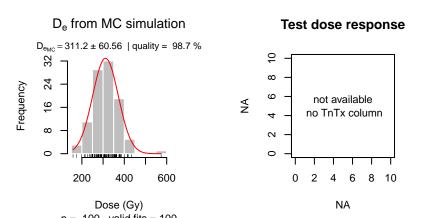




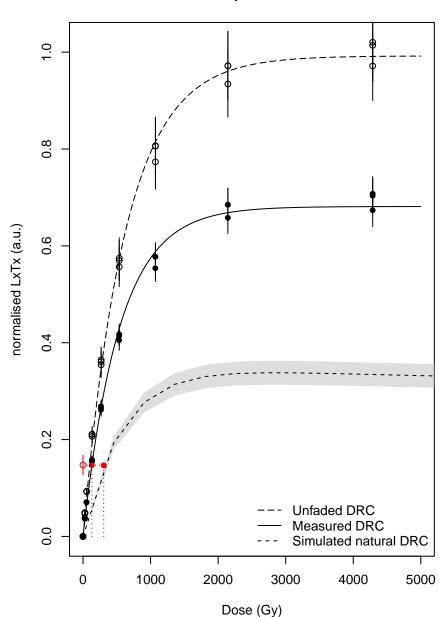
Simulated dose response curve

 $D_e = 307.28 \pm 60.56$ | fit: EXP





Dose response curves



 $\dot{D} = 7 \pm 0 \frac{Gy}{ka}$ $\dot{D}_{Reader} = 0.134 \pm 0.007 \frac{Gy}{s}$

 $log_{10} (\rho') = -5.42 \pm 0.09$

 $\left(\frac{n}{N}\right) = 0.15 \pm 0.02$

 $\left(\frac{11}{N}\right)_{SS} = 0.36 \pm 0.07$ $D_{E,sim} = 307.28 \pm 60.56 \text{ Gy}$

 $D_{0.sim} = 546.15 \pm 90.11 \text{ Gy}$

 $Age_{sim} = 43.9 \pm 8.93 \text{ ka}$

Likelihood profile: gamma



Likelihood profile: p0



Likelihood profile: sigma



Likelihood profile: gamma



Likelihood profile: p0



Likelihood profile: sigma



Source Dose Rate Prediction



help("calc_SourceDoseRate")

D_e distribution



Thermal Lifetime Contour Plot



Thermal Lifetime Density Plot





gSGC and resulting De











Background

























Profile log likelihood for σ_{OD}



TL (UVVIS)



help("merge_RLum.Data.Curve")

TL (UVVIS)



TL (UVVIS)



Profile log likelihood for σ_{OD}



Profile log likelihood for σ_{OD}



n = 62 | in 2 sigma = 41.9 %







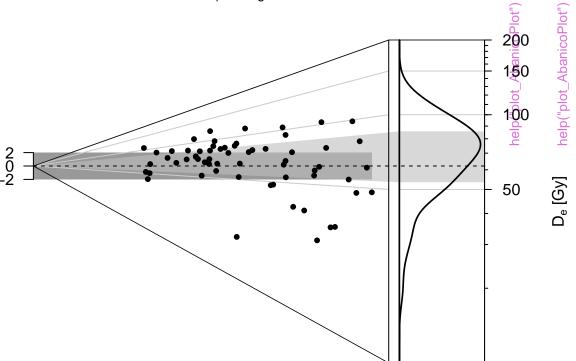


n = 62 | in 2 sigma = 41.9 %



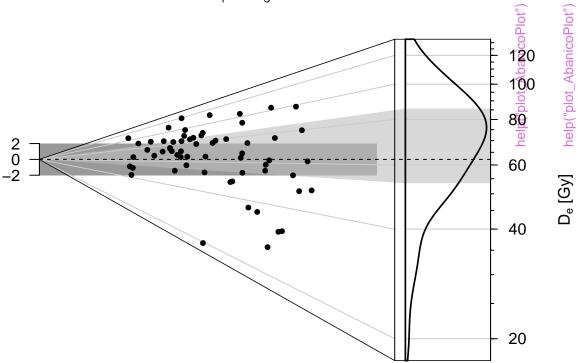








n = 62 | in 2 sigma = 41.9 %





n = 62 | in 2 sigma = 41.9 %









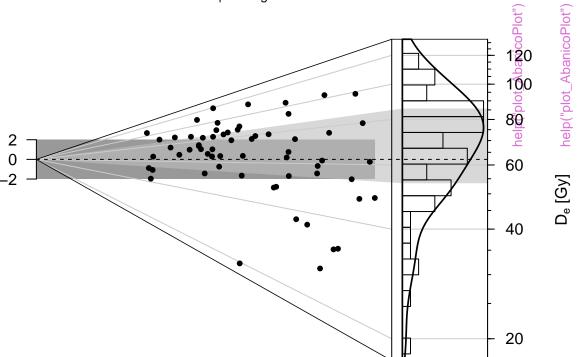


n = 62 | in 2 sigma = 41.9 %







































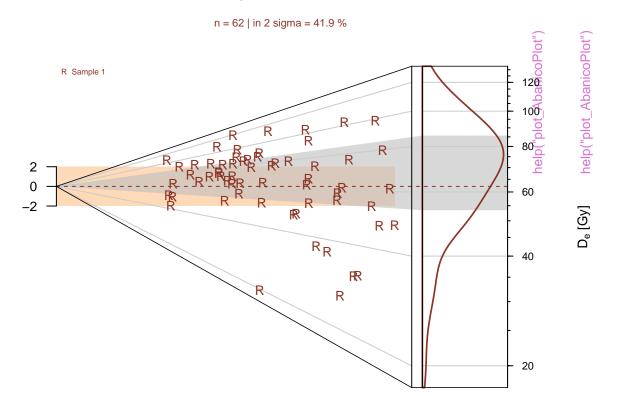


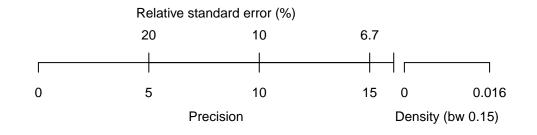
n = 62 | in 2 sigma = 41.9 %





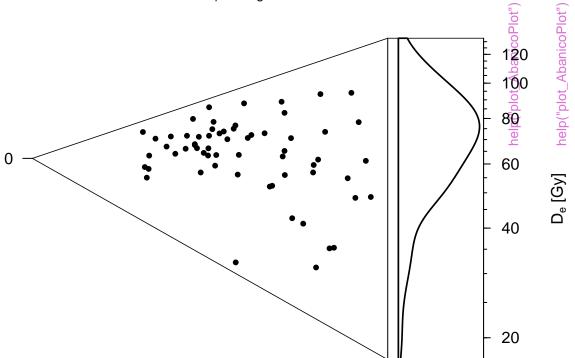
De distribution





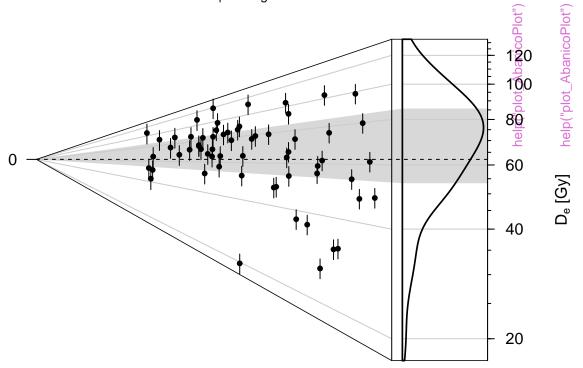


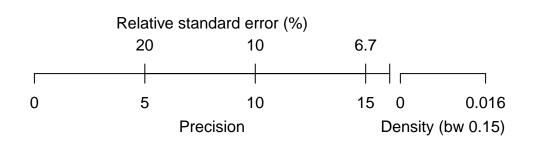






n = 62 | in 2 sigma = 41.9 %









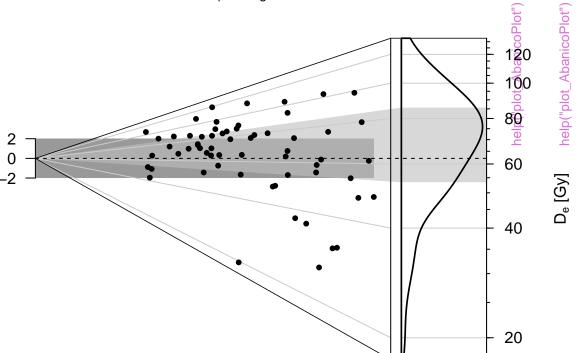






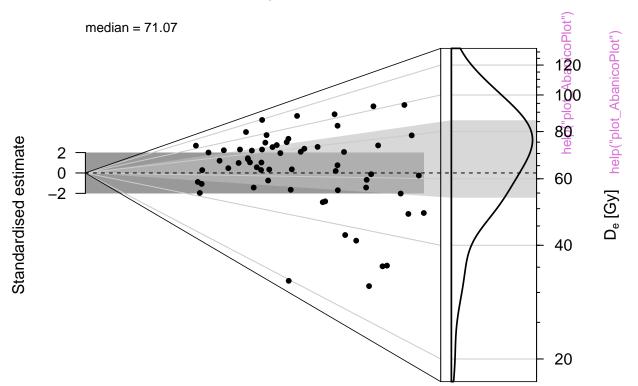


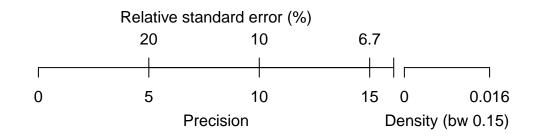














































Standardised estimate



Example data

















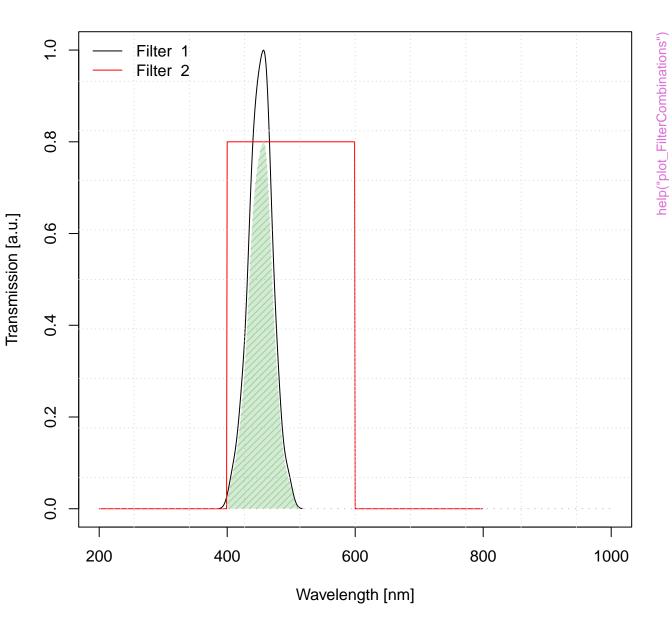
Example data



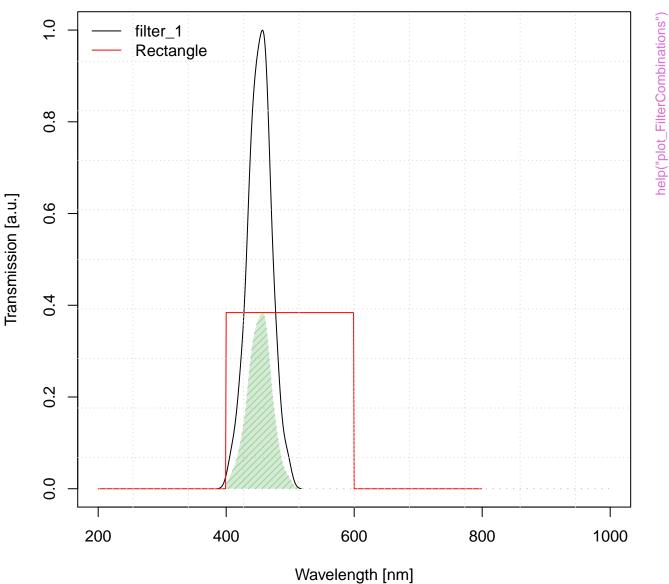




Filter Combination



Filter Combination





 $D_e = 1737.88 \pm 57.45$ | fit: EXP





 $D_e = 1737.88 \pm 54.9$ | fit: EXP





 $D_e = 1737.88 \pm 64.53$ | fit: EXP



D_e from MC simulation



n = 100 , valid fits = 100

















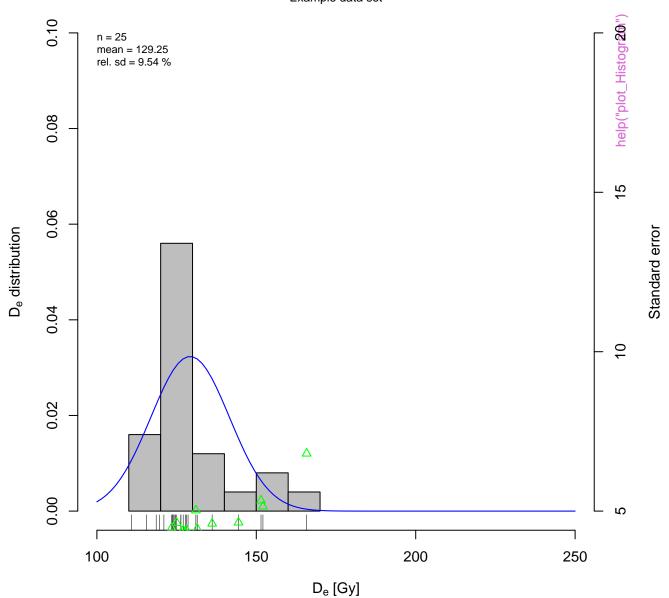


Histogram

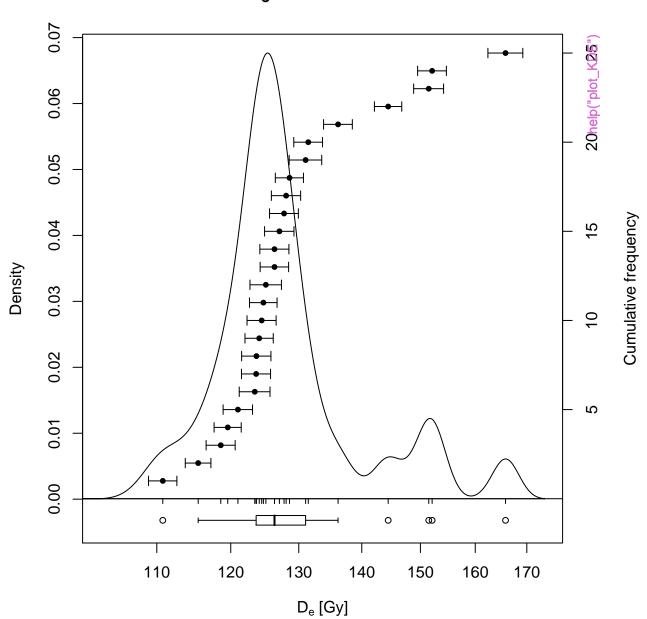


Histogram of De-values

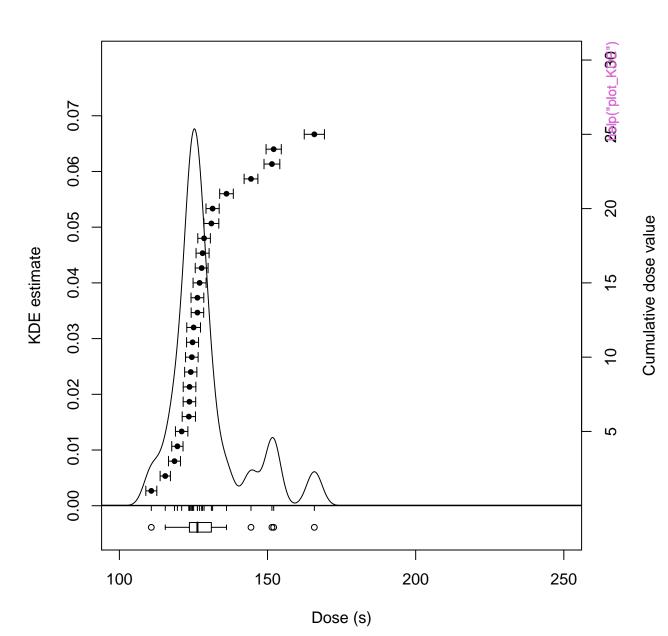
Example data set







Dose distribution















NR(t) Plot







NR(t) Plot



help("plot_NRt")









TnTx(t) Plot















TL combined



TL combined



unkown curve type



RLum.Data.Image



RLum.Data.Spectrum



help("plot_RLum.Data.Spectrum")

RLum.Data.Spectrum



RLum.Data.Spectrum



unkown curve type





0.0

0.1

0.2

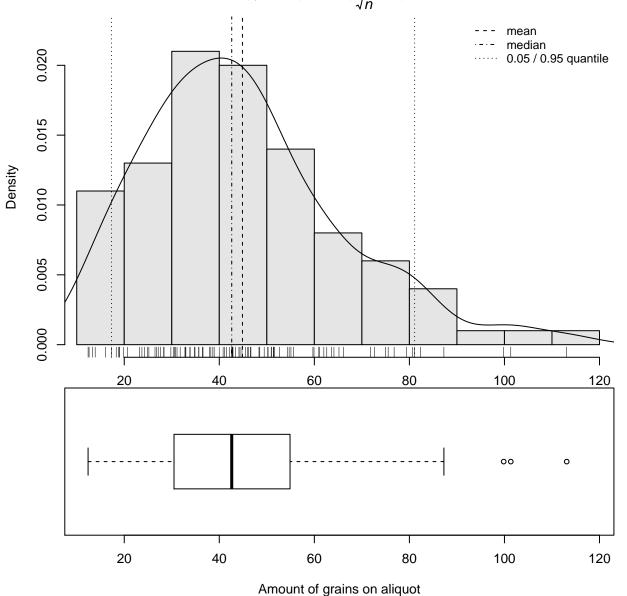
p0

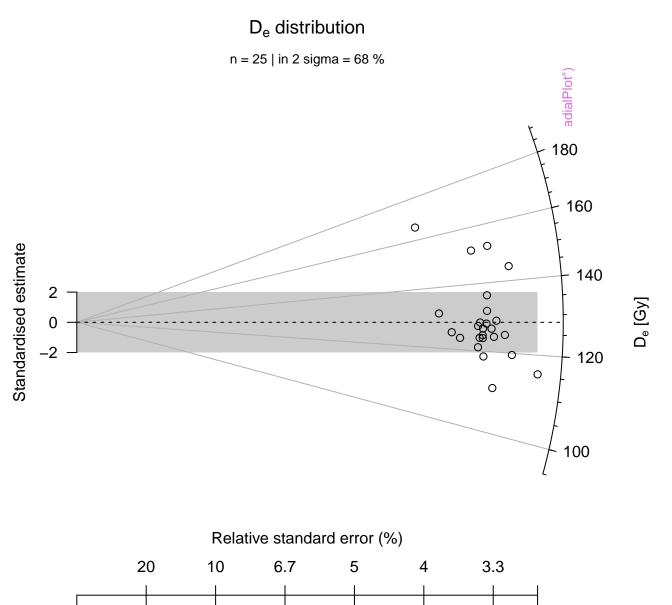
0.3

0.4

Monte Carlo Simulation

$$n = |\hat{\mu} = 45|\hat{\sigma} = 21|\frac{\hat{\sigma}}{\sqrt{n}} = 2|v = 0.84$$





Precision

















Precision





Data precision









D_e distribution















 $n = 25 \mid median = 126.34$

OSL



OSL



OSL



D_{e} distribution





Standardised estimate



D_{e} distribution





Standardised estimate

