

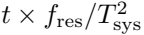








responsible for the









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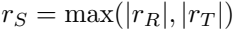






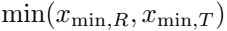




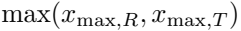




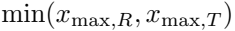














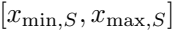
$$N_s = \text{int}\left(\frac{x_{\max,s} - x_{\min,s}}{r_s} + 1.5\right);$$



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Averaged channel intensity and weight (aligned spectra):

$$T_S(i) = \frac{w_R(i) \times T_R(i) + w_T(i) \times T_T(i)}{w_R(i) + w_T(i)} \quad (1)$$

$$w_S(i) = w_R(i) + w_T(i) \quad (2)$$



















WAVELENGTHS

$$\text{pdf}_R(x) = \frac{1}{\sigma_R \sqrt{2\pi}} \exp\left(-\frac{(x - \mu_R)^2}{2\sigma_R^2}\right)$$





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W R E

$$w_R(i) = \frac{1}{\sigma_R(i)^2}$$

Resampled channel intensity (all weights):

$$T_{R'}(i) = \frac{\sum_{j=j_{\min}}^{j_{\max}} f_R(j) \times w_R(j) \times T_R(j)}{\sum_{j=j_{\min}}^{j_{\max}} f_R(j) \times w_R(j)} \quad (3)$$







0 1 2 3 4 5 6 7





$$\beta = \sum_{j=j_{\min}}^{j_{\max}} f_R(j) \times w_R(j)$$

$$o_R(\omega) = \frac{f_R(\omega) \times w_R(\omega)}{\rho}$$

1900

$$T_{R'}(i) = \sum_{j=j_{\min}}^{j_{\max}} a_R(j) \times T_R(j)$$

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$$\text{var} \left(\sum_{j=j_{\min}}^{j_{\max}} \alpha_R(j) \times T_R(j) \right)$$

$$\sum_{j=j_{\min}}^{j_{\max}} \alpha_R(j)^2 \times \text{var} \left(T_R(j) \right)$$

$$\frac{1}{\beta^2} \sum_{j=j_{\min}}^{j_{\max}} f_R(j)^2 w_R(j)$$

$$\text{var}(aX + b) = a^2 \text{var}(X) + b^2$$









Resampled channel weight (weights TIME and SIGMA):

$$w_{R'}(i) = \frac{\left(\sum_{j=j_{\min}}^{j_{\max}} f_R(j) w_R(j) \right)^2}{\sum_{j=j_{\min}}^{j_{\max}} f_R(j)^2 w_R(j)} \quad (4)$$











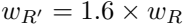


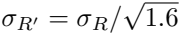


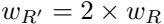
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OR

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OR

OR

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Resampled channel weight (weight EQUAL):

$$w_{R'}(i) = \frac{\sum_{j=j_{\min}}^{j_{\max}} f_R(j) w_R(j)}{\sum_{j=j_{\min}}^{j_{\max}} f_R(j)} \quad (5)$$

WORLD







Averaged channel intensity and weight (non-aligned spectra):

$$T_S(i) = \frac{w_{R'}(i) \times T_{R'}(i) + w_{T'}(i) \times T_{T'}(i)}{w_{R'}(i) + w_{T'}(i)} \quad (6)$$

$$w_S(i) = w_{R'}(i) + w_{T'}(i) \quad (7)$$







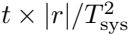


2017





1992-2016





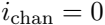
$$\frac{t_{S_{\text{out}}} \times |r_{S_{\text{out}}}|}{T_{\text{sys}, S_{\text{out}}}^2} = \frac{t_{S_{\text{in}}} \times |r_{S_{\text{in}}}|}{T_{\text{sys}, S_{\text{in}}}^2} + \frac{t_{\text{obs}} \times |r_{\text{obs}}|}{T_{\text{sys}, \text{obs}}^2}$$

1990-2010



val, sort, sort, sort

$f(\text{chad}) = f(\text{rees}) \times f(\text{chad}) = f(\text{chad}) + f(\text{oi})$



various free software and tools

WORLDWIDE

— *Leaves, roots, seeds, roots*





2020-2021

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Free, open, free, open