Allocating Observing Time

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Requested Time Only

$$T^i_{\text{alloc}} = \frac{T^i_{\text{req}}}{T^{\text{tot}}_{\text{req}}} \cdot T_{avail}$$

Requested Time and Number of Proposals

$$T^i_{\text{alloc}} = T_{\text{avail}} \left(w_{req} \cdot t^i_{\text{req}} + w_N \cdot n_i \right)$$

Requested Time and Number of Proposals with Different Categories

$$T^i_{\rm alloc} = \sum_k \left[w_{\rm req} t^i_{\rm req}(k) + w_N n_i(k) \right] f_k T_{\rm avail} \tag{4}$$

For example, if we had the above three categories of Normal, TOO and DDT, reserved 20% of the overall budget as DDT, and split the rest into 50% for normal and 30% for TOO proposals, this would give allocating fractions of $f_{\rm norm} = 0.5$, $f_{\rm too} = 0.3$ such that

$$\begin{aligned} T^i_{\rm alloc} \quad = \quad & 0.5\, T_{\rm avail} \left[w_{\rm req} t^i_{\rm req}({\rm norm}) + w_N n_i({\rm norm}) \right] + \\ & 0.3\, T_{\rm avail} \left[w_{\rm req} t^i_{\rm req}({\rm too}) + w_N n_i({\rm too}) \right] \end{aligned} \tag{5}$$

$T^1_{\rm alloc} = 7.8$, $T^2_{\rm alloc} = 3.3$, and $T^3_{\rm alloc} = 4.3$.

Requested Time and Number of Proposals and Number of Publications

$$T^i_{\text{alloc}} = T_{\text{avail}} \left(w_{req} \cdot t^i_{\text{req}} + w_N \cdot n_i + w_{\text{pub}} \cdot f^i_{\text{pub}} \right)$$

$$T^1_{\text{alloc}} = 10.7,\ T^2_{\text{alloc}} = 5.8,\ \text{and}\ T^3_{\text{alloc}} = 2.8\,\text{Ms}.$$

Thoughts?