O56000

Finally, for the last question, the orthogonal projection onto $\mathbb{B}^{I'}$ is given by

$$K' = I - K.$$

With

$$(I - K)\underline{\mathrm{f}} = \underline{\mathrm{f}} - K\underline{\mathrm{f}} = \underline{\mathrm{f}} - \underline{\mathrm{h}} * \underline{\mathrm{f}}$$

we can also write

$$K'\underline{\mathrm{f}} = \underline{\mathrm{f}} - \underline{\mathrm{h}} * \underline{\mathrm{f}}.$$

or as a convloution

$$K\underline{\mathrm{f}} = \underline{\mathrm{h}}' * \underline{\mathrm{f}},$$

where $\underline{\mathrm{h}}'$ is given by

$$\underline{\mathcal{F}\mathrm{h}}'[m] = \begin{cases} 1, & m \in I' \\ 0, & m \in I \end{cases}$$