

**input** : vectors with  $L(t_i)$ ,  $t_i$  and  $V_0(t_i)$ , arranged by their appearance time  $t_i$ ,  $N$  grid points  $x_k$

**output**:  $\tau_{num}(x_k)$  as a vector of size  $N$

$\tau_n(x_k) \leftarrow$  array length  $N$  of empty dynamic arrays length  $n$  ;

$k \leftarrow 1$ ;

**for**  $i \leftarrow 1$  **to** *length of*  $t_i - 1$  **do**

**if**  $L(t_{i+1}) \geq L(t_i)$  **then**

**repeat**

$\tau_{n+1}(x_k) \leftarrow$  output of interpolating  $L(t), V_0(t)$  at  $t_i, t_{i+1}$ ;

$k \leftarrow k + 1$ ;

**until**  $x_k > L(t_i)$ ;

**end**

**if**  $L(t_{i+1}) < L(t_i)$  **then**

**repeat**

$\tau_{n+1}(x_k) \leftarrow$  output of interpolating  $L(t), V_0(t)$  at  $t_i, t_{i+1}$ ;

$k := k - 1$ ;

**until**  $x_k < L(t_i)$ ;

**end**

**end**

**for**  $i \leftarrow 1$  **to**  $N$  **do**

$\tau_{num}(x_k) \leftarrow \tau_1(x_k)$ ;

**for**  $j \leftarrow 2$  **to** *length of*  $\tau_n(x_k)$  **do**

**if**  $j$  *even* **then**

$\tau_{num}(x_k) \leftarrow \tau_{num}(x_k) + \tau_j(x_k)$ ;

**else**

$\tau_{num}(x_k) \leftarrow \tau_{num}(x_k) - \tau_j(x_k)$ ;

**end**

**end**