

III.C.5. User-Defined Numerical Resolution Function

The user-defined resolution (UDR) function is another “realistic” resolution function, a convolution of several numerical components, designed for use when other forms are not adequate. The components are

- electron burst width (Gaussian function of time)
- time-of-flight channel width (square function of time; accordion = crunch boundaries)
- user-defined numerical function of time at specified energies, with linear interpolation both in time and in energy
- other user-defined numerical function(s) as required

The “complete” resolution function is then the numerical convolution of the individual pieces:

$$I(t) = \int I_1(t-t_1) dt_1 \int I_2(t_1-t_2) dt_2 \cdots \int I_{n-1}(t_{n-2}-t_{n-1}) dt_{n-1} I_n(t_{n-1}) \quad . \quad (\text{III C5.1})$$

To use the UDR resolution function, include card set 16 of Table VI B.2 in the PARAmeter file, or card set P16 of Table VIA.1 in the INPut file. Create file with UDR function, formatted as described in Table III C5.1. See test case tr114 for examples.

NOTE: What is gained in flexibility is lost in accuracy and computation speed. This resolution function should be used with extreme caution.

Table III C5.1. Format for numerical UDR function file.

Line number	Column	What	Meaning
1,2,...	any		Descriptive information, as many lines as needed
3	1–5	----- (at least five hyphens)	end of descriptive information
4	1–?	Energy (eV)	energy at which resolution function will be given
5,6,...	1–?	Time (ns), Function	value of resolution function at the specified time
7	(end with a blank line)		
Repeat lines 4–7 as many times as needed, being sure to have same number of (time, function) values for each energy.			