## III.C.4. Straight-Line Energy Average

This relatively simple resolution function takes the form

$$I_1(E') = \begin{cases} 1/D & \text{for } E - D < E' \\ 0 & \text{otherwise} \end{cases} , \qquad \text{(III C4.1)}$$

so that the broadened cross section is given by

$$\bar{\sigma}(E) = \frac{1}{D} \int_{E-D}^{E} \sigma(E')\, dE' \quad . \qquad \text{(III C4.2)}$$

Note that the apparent position of a resonance is altered (shifted to a higher energy) by the use of this resolution function.

It is also possible to use this resolution function without shifting the apparent position of the resonances. To invoke this option, include the phrase

```
CENTER THE CONSTANT ENERGY RESOLUTION FUNCTION
```

in the INPut file. In this case, the resolution function of Eq. (III C4.1) is replaced by

$$I_1(E') = \begin{cases} 1/D & \text{for } E - D/2 < E' < E + D/2 \\ 0 & \text{otherwise} \end{cases} , \qquad \text{(III C4.3)}$$

and the broadened cross section is given by

$$\bar{\sigma}(E) = \frac{1}{D} \int_{E-D/2}^{E+D/2} \sigma(E')\, dE' \quad . \qquad \text{(III C4.4)}$$

Input for the value of *D* is variable DDDEEE in card set 5 of the INPut file. See test case tr105 for examples. Note that this parameter cannot be fitted (i.e., it cannot be treated as a search parameter in the fitting procedure).

CAUTION: Difficulties have been experienced in using this resolution function in the neighborhood of extremely narrow resonances (probably due to the discontinuous nature of the function). When results look very odd (abrupt changes in value of cross section as a function of energy, for example), try increasing the number of mesh points in the auxiliary grid (see Sections III.A.1 and III.A.2). If problems persist, contact the SAMMY author.