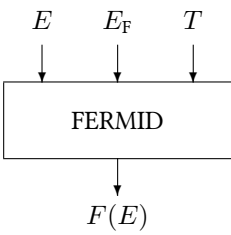


Block FERMID

The FERMID block calculates the Fermi-Dirac probability that a given energy level is occupied or not.



|            |        |
|------------|--------|
| Name       | FERMID |
| Function   | se0006 |
| Inputs     | 3      |
| Outputs    | 1      |
| Parameters | 0      |
| Strings    | 0      |
| Group      | S      |

Inputs

- 1    Energy  $E$  / eV
- 2    Fermi energy  $E_F$  / eV
- 3    Temperature  $T$  / K

Outputs

- 1    Fermi-Dirac probability that energy level  $E$  is occupied

Parameters

None

Strings

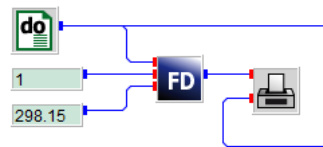
None

**Description** The Fermi-Dirac distribution is defined by

$$f(E) = \left( 1 + \exp \left( \frac{E - E_F}{kT} \right) \right)^{-1}$$

where  $k$  is the Boltzmann constant.

fermid.vseit



A **DO** block varies energy from 0.8 to 1.2 eV in steps of 0.01 eV. For a Fermi energy of 1 eV and a temperature of 298.15 K, both set by two **CONST** blocks the calculated Fermi-Dirac distribution is plotted by the **PLOT** block.

