

In the "measure_1_12_16_0.dat" file, the first column is the time grid, which is followed by the 9 RTD readout (from left to right labeled as 0 to 8, unit voltage). The time is in second, and the difference between the first entry is the time elapsed from the start of the measurement.

The file "voltage_to_temperature.txt" describes how to convert the RTD readout to temperature, which is summarized here.

1. RTD 0 located lowest, and RTD 8 is the highest in the core. Because RTD 8 may lie in a non-fuel adjacent region (as shown in the plot), its value is not used in the following correction process.
2. A correction process is necessary for the odd RDTs, i.e., RDT 1, 3, 5, 7. The correction value can be computed by the difference between the average of the even RDTs and the odd ones when the reactor is not powered on, i.e.,

$$\begin{aligned} \text{correction} = & \text{ave}[\text{ave}(v_0), \text{ave}(v_2), \text{ave}(v_4), \text{ave}(v_6)] \\ & - \text{ave}[\text{ave}(v_1), \text{ave}(v_3), \text{ave}(v_5), \text{ave}(v_7)]. \end{aligned} \quad (1)$$

Then, the readout of the odd RTDs can be calibrated by,

$$v_{\text{odd}} = v_{\text{odd}} + \text{correction}. \quad (2)$$

and the even RTDs do not need correction.

3. After correction, the temperature can be computed based on the voltages of all the RTDs by

$$R = (2.5 - V) * 1000/V, \quad (3)$$

$$T = (R - 100)/0.385, \quad (4)$$

where V is the corrected RTD voltages, and the temperature is in Celsius.