

Temperature Display of the Front and Back Crystal Zones of the Neutral Particle Spectrometer

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It is critical to monitor the temperatures of the crystals in the front and back zones of the Neutral Particle Spectrometer (NPS). This note describes the temperature displays.

Each crystal zone of the NPS, the front and the back, has 56 temperature sensors. LabVIEW code was written to display the temperature of each sensor. Figure 1 is a screenshot of the display.

There are two temperature maps, one for the front crystal zone and one for the back crystal zone. The maps are laid out similar to the sensor layout in the NPS, with the axis numbers corresponding to the row and column of the sensor locations. There is a third map of the absolute values of the differences between the temperature sensor displays of the front and back zones. The values shown in Fig. 1 are randomly generated.

The color displayed in a cell depends upon where the displayed value of that cell falls in the range of set limits for high high, high, low, and low low, as shown in Table I. Since the temperature of the crystals are to be maintained at 18°C, the values selected for high high, high, low, and low low are 21°C, 19.5°C, 16.5°C, and 14.5°C, respectively.

Range	Color
temp. \geq high high	red
high high $>$ temp. \geq high	yellow
low $<$ temp. $<$ high	green
low low $<$ temp. \leq low	yellow
temp. \leq low low	red

TABLE I. Ranges of set limit and corresponding cell color for temperature value.

In conclusion, using LabVIEW, temperatures are displayed for each NPS temperature sensor in the front and back crystal zones.

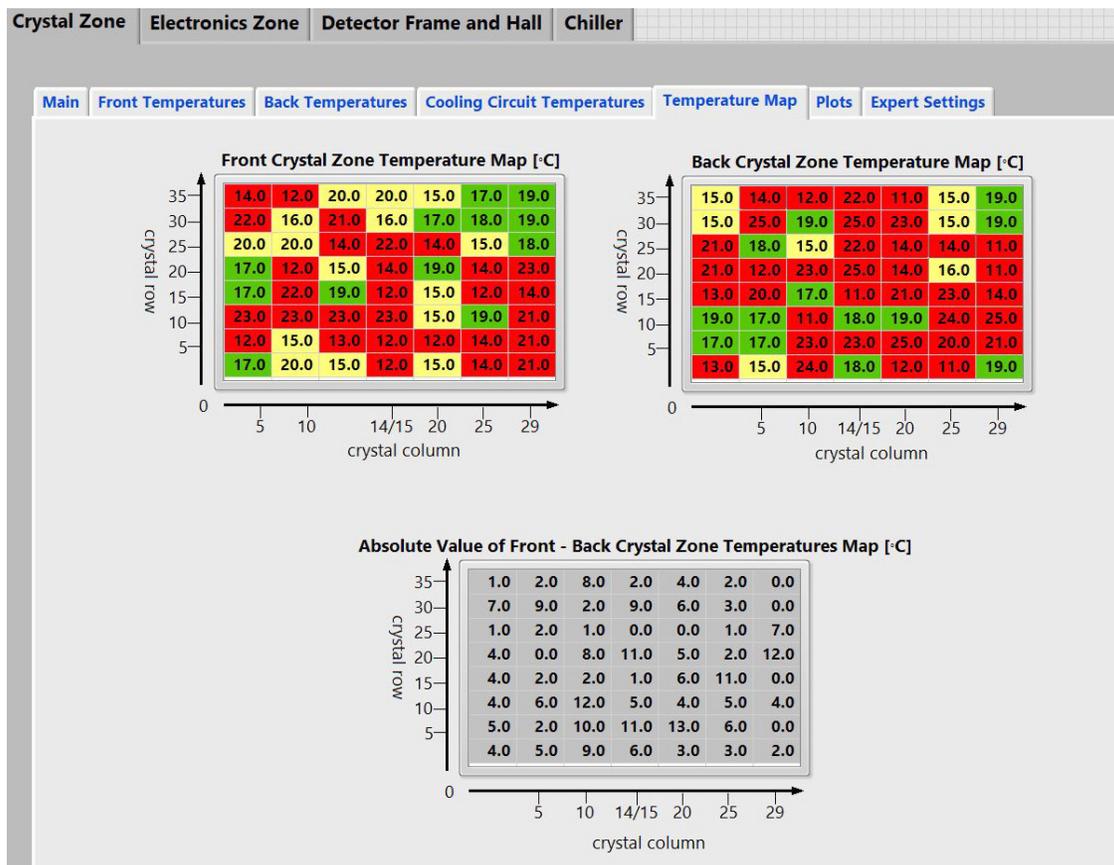


FIG. 1. Screenshot of temperature maps of front and back crystal zones, and temperature differences.