ALMA and the Green Bank Telescope

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The 100 m Green Bank Telescope will be completed in early 2000. The GBT is the most ambitious, single radio telescope ever constructed. It has a large number of unique design and performance features including an offset feed (clear aperture), an active surface, a closed-loop laser metrology system for surface figure and telescope pointing control, a feed turret for ready selection of numerous receivers, and a multi-input, 256k-channel spectrometer. The GBT will operate over a frequency range of 100 MHz to 115 GHz.

The GBT and ALMA have great potential for complementary observations. The GBT will cover millimeter wavelengths longward of 2.6 mm and thus has a significant overlap with ALMA. The total physical collecting areas of 7854 m^2 for the GBT and 7238 m^2 for the 64x12-m ALMA configuration will give the facilities comparable flux sensitivities. The GBT has a wide field of view at its Gregorian focus that extends >5 arcmin at 90 GHz with minimal aberrations. When equipped with focal plane array receivers, the GBT will be able to image large fields with high sensitivity very quickly. Such images will provide the astrophysical context of regions studied at high angular resolution with ALMA. The clean beam response and accurate absolute calibration of GBT data will make it ideal for combination with ALMA images. These, and other areas in which the GBT and ALMA will work in concert will be described in this poster.

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