

## HIA Breaks the Mold: the Latest High-Performance New-Technology Reflector

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A major breakthrough on the Canadian technology development has occurred, with the successful completion of the Mark 2 version of the CART (Composite Applications to Radio Telescopes) reflector at the Herzberg Institute for Astrophysics DRAO site. Laser ranging measurements reveal a superb surface, with a 0.51 mm rms from a best-fit parabola – good for high efficiency high frequency operation. The Mk2 reflector shows none of the large-scale deviations present in the Mk1 prototype as a result of changes in the manufacturing process.

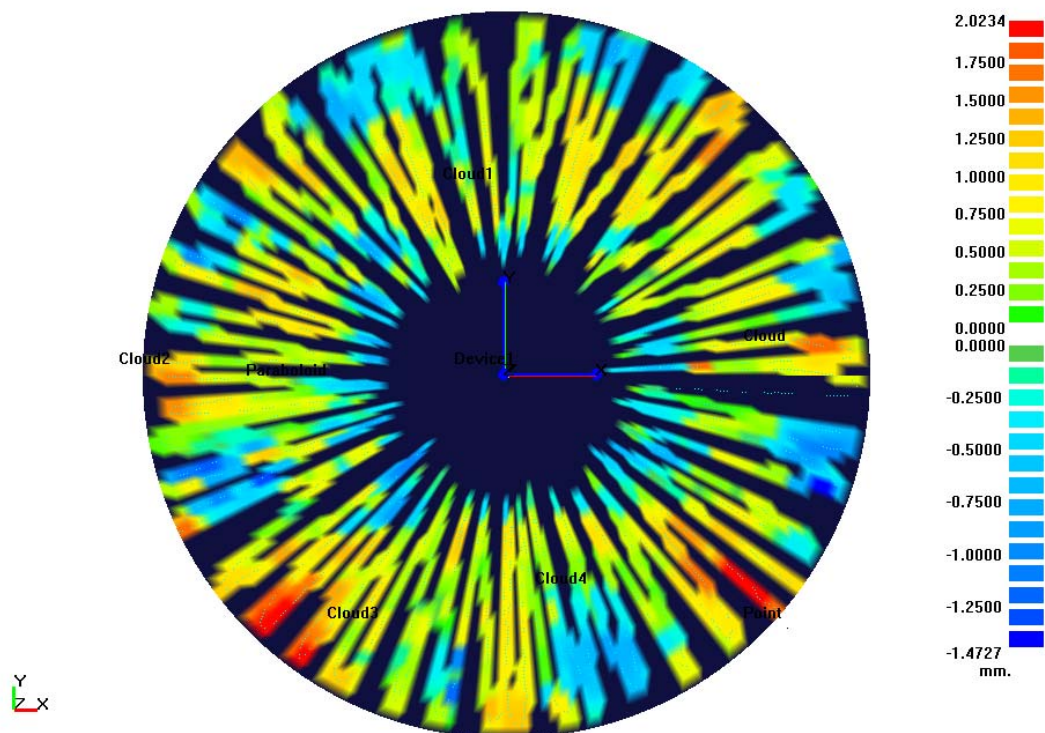


Figure 1. Measurement results for CART Mk2 composite reflector.

On September 12<sup>th</sup>, the Mk1 reflector was replaced on the test mount by the Mk2, complete with feed structure designed to house the Phased Array Demonstrator (PHAD) prototype receiver array that is also part of the SKA development work (Figure 2).



Figure 2. CART Mk2 Reflector being lifted into place September 12<sup>th</sup>. The housing for the PHAD array is visible at the focus.

The Mk2 is a great success, with significant advancements in both design and production of high-performance cost-effective composite radio reflectors that will be required for the SKA. This programme represents a significant aspect of Canada's PrepSKA contribution.

Work is now progressing apace on performance of the reflector. In addition, the PHAD array is now installed on the Mk2 for on-the-sky testing (Figure 3).



Figure 3. The Mk2 antenna complete with the 196-element PHAD array, mounted on September 26, 2008. PHAD is now undergoing on-the-sky testing.