

Antarctic Large Terahertz Telescope

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We propose construction of a 30-m class terahertz telescope at the plateaus of Antarctica like the (new) Dome Fuji station to make astronomical observations of cosmology to planets, including large field searching of extremely distant galaxies, at the frequencies of 200 to 1,500 GHz (1.5 THz). For the observations at such extremely high frequencies, a very dry site is required, because the high frequency radio emission from the universe is absorbed by water vapor in the atmosphere of the earth. The plateaus in the inland of Antarctica, which are extremely cold and high altitude and thus the driest on the earth, are the best and unique sites for the observations. We are proposing the project as the next large telescope to the astronomical society under the collaboration between astronomical and polar science societies.

Keywords: astronomical observations, large astronomical telescope, domes in Antarctica

南極大型望遠鏡計画: 30m級テラヘルツ望遠鏡

- ・建設地: 新ドームふじ(又はリッジA)
- ・口径: ~ 30 m
- ・重量: ~ 1000 トン
- ・電力: ~ 600 kVA (昭和基地×2)
- ・越冬隊: 5~10 人/冬
- ・建設費: ~ 300億円
- ・運用費: ~ 30億円/年
- ・国際協力

アジア, 豪州(大学), 米国(大学), 欧州(ESO?)

- ・国立天文台 + 国立極地研究所
- ・建物・輸送設備等

望遠鏡の付帯設備として要求

- ・運用期間: ~ 30年 (筑波大等)
- ・将来への発展 (南極30mWG)

赤外THz干渉計, 気球周回VLBI, 他
一大天文観測拠点化 (国際南極天文台)

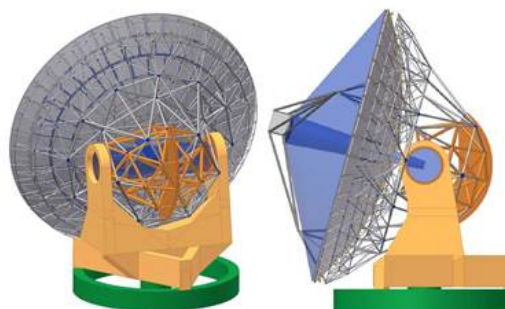


Figure 1: Truss with a distributed CFRP (grey) to steel (orange) construction. Masses for this design are given in Table I and rod sizes are given in Table II.

(CCAT25m) → 南極30m級

本格的に検討開始 (2016.01~)

- ・大規模輸送法、大電力供給法
- ・内陸輸送ルート開拓、他
- ・夏季基地建設 (第10期南極観測)

サイト調査等 (2017~)

- ・気象タワー (h~40m、気温、風速他)
- ・雪面下地盤調査、等

計画策定

- ・計画書作成 (2017-2019)
- ・観測の検討 (分野別6WG)・技術的検討