Advanced receivers for submillimeter and far infrared astronomy

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op gezag van de
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To my wife Helen

and my two sons

David and Andreas

Cover Front: *Caltech Submillimeter Observatory on top of Mauna Kea, Hawaii. Photograph was taken by the author during full moon on October 12, 2006, at 3 o'clock in the morning. Exposure time was 61s, f/5.6, and ISO 200 sensitivity. Projected in the foreground is a high altitude balloon heading for the stratosphere to carry out atmospheric and astrophysical observations.*

– Back: *The Herschel space observatory pointed at star forming regions in M33 (the pinwheel galaxy) in the constellation Triangulum. The distance from our "own" galaxy, the Milky Way, to M33 is approximately 3 million lights years. To avoid attenuation from water in the Earth atmosphere, follow up astrophysical observations may eventually be carried out by aircraft such as Sofia, at low precipitable water vapor sites in Antarctica, the Atacama desert in Chile (not shown), Mauna Kea in Hawaii, and by future space missions.*

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