"A DUAL CHANNEL SOLAR RADIOMETER"

A Thesis submitted to the University of Auckland
for the degree of Doctor of Philosophy

by

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ABSTRACT

A description of the development and design of a two channel solar radiometer is given. Particular attention has been paid, in the choice of receiving system and the design of its components, to the avoidance and reduction of interference. The system used is a two receiver multiplying interferometer with the addition of phase switching. A computer controlled phase cancelling system is used to make the interferometer fringe track the source (i.e. the sun), thereby producing a rectified output.

An outline of the design of comb-line filters is given. These low loss transmission filters are used at the receiver inputs to attenuate strong out of band interfering signals.

Operational amplifiers are used to gain stabilize the RF preamplifiers. Very low sensitivity of gain to temperature change is shown to result from the use of this technique.

The system incorporates an analogue magnetic tape recorder so that signals of interest can be replayed for paper strip chart recording at high speed. The recording system has the feature that time of day information is recorded automatically in conjunction with the receiver signals.

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My use of 'whose-inanimate' can be attributed to the comments made by H.W. Fowler in his "Dictionary of Modern English Usage", (Oxford University Press, 1959).

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