

Properties of new interferometer using modified FM tuners

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The authors will propose a new design theory on a direction finder by an interferometer system in order to be highly precise a measurement to detect the direction of an epicenter for the earthquake.

We reported that prior to actuation of an earthquake the epicenter quick-setting ionization (EQSI) layer builds up in a short period. There are many evidences indicating that in a height range from a few hundreds to a few thousands meters above the epicenter, electrical discharges occur in the atmosphere before an earthquake. Such discharges are the main reason for drastically worsened FM-wave propagation and enhanced wave noises. Also, the electric charged aerosol will stray for a short period of time at a few kilometer height in the atmosphere. The authors consider that the electromagnetic waves will be disturbed by the electric charged aerosol. Additionally, we consider that the ionospheric channel is made up by the air shower of the cosmic rays. Furthermore we suspect that with the appearance of those sporadic electromagnetic waves, electric charged aerosols, and ionospheric channels, in a height of a few thousands meters we expect that an ionization layer emerges in a short period of time. We call this layer an EQSI layer, and suspect that its occurrence has an important role in earthquake prediction. This EQSI layer will cause radio noise in the electromagnetic wave band.

In this paper, the authors describe a measurement system for the EQSI layer prior to an earthquake. As a matter of course, the important items of this observation on the EQSI layer over an epicenter are the height, the distance, the width, the direction and its estimate time of occurrence. This trial for the design of a direction finder by an interferometer system allows us to estimate these items almost without delay using the FM band noise of the frequencies.

We will propose a new trial circuits on an observation for the incoming electromagnetic wave noise from the EQSI layer. The measurement circuits of a direction finder by an interferometer system with a new local oscillator and two set of an additional IF amplifiers will be shown. Using the both wave forms of a main signal wave received by main antenna and the other signal wave received by subsidiary antenna, an interferometer phenomena can make observation on the synchroscope by a detection of a phase difference.