LICENSING OPPORTUNITY: AC AND DC BIPOLAR VOLTAGE SOURCE USING QUANTIZED PULSES

DESCRIPTION

Problem

A wide variety of instruments exist to measure voltage. These instruments must be calibrated to provide accurate measurements. In the field of AC and DC metrology, instruments are devised to provide exact measurements of voltage so that other instruments can be calibrated to them. The Josephson junction has been utilized in metrology to take advantage of its quantum mechanical characteristics, where time-integrated areas of every generated voltage pulse are exactly the same regardless of the shape of the pulse. For example, a highly accurate voltage source utilizing Josephson technology exists for unipolar ac and dc voltages that control pulses of a single polarity. However, an instrument is needed to produce a highly accurate bipolar voltage source for calibration and other purposes.

Invention

This invention solves this problem. It is a Josephson circuit that provides accurate, stable, arbitrary waveform generation with a pre-determined frequency spectrum. It will enable the synthesis of both AC and DC bipolar waveforms, where voltage pulses of both positive and negative polarity are precisely controlled and used to increase the output voltage.

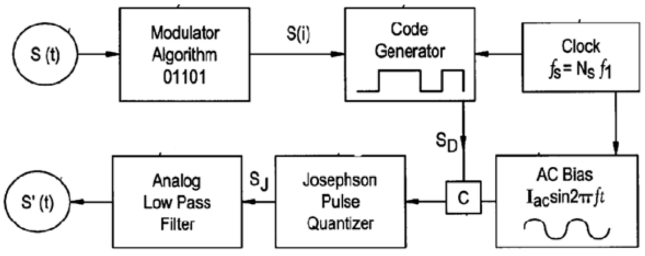
BENEFITS

Potential Commercial Applications

- Generation of digitally synthesized AC signals with calculable RMS voltages.
- Characterization of digital-to-analog and analog-to-digital converters.
- Calibration of DC and AC reference standards and voltmeters.
- Synthesis of low-phase-noise radar signals.

Competitive Advantage

Eliminates voltage, phase, and timing variations that prevent metrological accuracy.



Depiction of circuit of Invention.

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