Pseudo Noise Sequence to Triangular and Sinusoidal Wave Converter

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Abstract— **This project aims at the realisation of a device which converts a PN Sequence to a Triangular as well as Sinusoidal Wave. An implementation of a mixed signal design, this may find various applications. The PN Sequence generator is written in verilog and foprms the digital part of the circuit wheras the conversion to triangular and sinusoid forms the analog part. Due to certain constraints, the output for the sinusoid wave could not be obtained hence the design stands errenous**
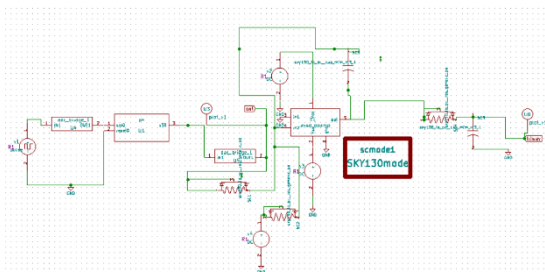
Keywords—PN Sequence, Triangular Wave, Sinusoidal Wave.

I. REFERENCE CIRCUIT DESCRIPTION

Pseudo-Noise (PN) sequences are commonly used to generate noise that is approximately "white". It has applications in scrambling, cryptography, and spread-spectrum communications. These are very widely used in communication standards these days. PN sequences are generated by Linear Feedback Shift Registers (LFSR)
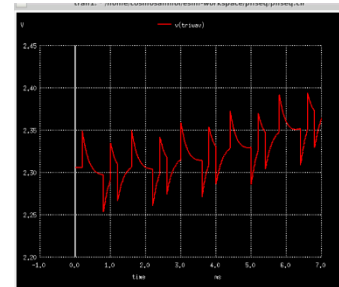
When a square wave input is applied to an integrator circuit it generates triangle wave in the output. An integrator circuit can be built using operational amplifier, one resistor and a capacitor. When a constant voltage is given to capacitor through resistor, it charges to max voltage and produces linear ramp. So, this principle is used to convert square wave into triangle wave. Finally, another resistor capacitor configuration is used to convert triangle wave to sine wave.
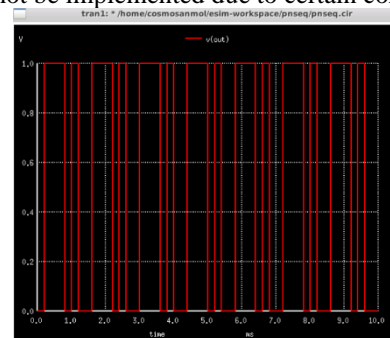
II. SCHEMATIIC

The schematic shows the complete circuit implemented with the analogue as well as digital parts.

III. WAVEFORM

output waveforms are obtained as triangular wave , further processing is needed to convert it into a sinusoid which could not be implemented due to certain constraints.

This shows the PN Sequence output which is obtained from the digital part of the circuit, this is fed into the integrator and the output is obtained.

IV. REFERENCES

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