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## Documents

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### Flux-flow oscillator (FFO) made with the fluxon cloning circuits

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#### Abstract

In present paper we have developed a new device, Flux-Flow Oscillator (FFO) where flux cloning phenomena have been demonstrated. Such FFO made with the use of flux cloning circuit can in principle operate even without magnetic field, that is in a very different manner than conventional FFO [1] developed nowadays for practical applications [2, 3]. We have designed such a novel device and build it up with the use of the long Josephson T-shaped junction of a linear overlap geometry made up with Nb-AIO x -Nb technology. We have theoretically described the properties of such a device and the dynamics of vortices there. These theoretical studies have been performed in the framework of a sine-Gordon model, which includes surface losses. Finally we have tested the device experimentally and demonstrated that the flux cloning can lead to a strong coherent terahertz radiation. There the shape of the spectral lines and the current-voltage characteristics have been also measured. © 2011 Springer Science+Business Media B.V.

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