ABSTRACT

The invention relates to a microwave signal amplifier comprising a chain of nonlinear inductive dipolar elements each forming one superconducting asymmetric loop of Josephson junctions, said chain being arranged between an input of the chain where a signal to be amplified is applied and an output of the chain where an output signal develops, the amplifier in addition comprising a controllable system for generating magnetic flux with a view to making a current flow through said loops, the amplifier in addition comprising a first microwave pump and a means for coupling said input of the chain to the first pump, the first pump generating through the first coupling means a wave in the chain in the direction running from the input to the output of frequency set to transfer power at the frequency of the signal to be amplified. The device further comprises a second microwave pump and a second coupling means for coupling said output of the chain to said second pump, the second pump generating through the second coupling means a wave in the chain in the direction running from the output to the input, at a frequency different from the frequency of the first pump and so as to attenuate in said direction running from the output to the input microwaves propagating at the frequency of the signal to be amplified.

Figure for the abstract: Fig. 1