

## A NOTE ON THE TRANSFORMATION OF GROUNDED INDUCTORS TO FLOATING INDUCTORS USING OFA AND FCCII\*

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Received 5 September 2012

Accepted 10 September 2012

Published 24 January 2013

Recently this author published a paper<sup>1</sup> discussing the transformation of grounded inductors to floating inductors using operational floating amplifier (OFA) or floating current conveyor (FCCII). The author classified the paper as a partially review paper as stated in the abstract and in the introduction of Ref. 1. The author states in the abstract that: It is well known that a floating inductor circuit is realized from a grounded inductor circuit by replacing the operational amplifier by a floating operational transconductance amplifier. This idea is extended to transform current conveyor grounded inductors to floating inductors by replacing the current conveyor by the recently introduced floating current conveyor.

*Keywords:* Operational floating amplifier; floating current conveyors; grounded inductors; floating inductors.

Several active RC realizations for realizing ideal grounded and floating inductors are available in the literature.<sup>1–9</sup> Classification of different active RC circuits simulating floating inductors was given in Ref. 2. The active building block used in Ref. 2 is the conventional operational amplifier (Op Amp) as well as special amplifiers with floating output ports.<sup>3</sup> The use of Op Amps in gyrator circuits is of great practical importance because of their wide range of applicability. In Ref. 3 a floating gyrator circuit using two fully floating operational transconductance amplifiers was generated from the Riordan-gyrator circuit which employs two Op Amps.<sup>4</sup> The operational floating amplifier (OFA)<sup>5</sup> which is also known as a nullor<sup>6</sup> can also be used in realizing floating gyrators.<sup>5</sup>

The valuable classification of floating inductors given in Ref. 2 included also the transformation of the grounded inductors given in Refs. 7 and 8 to a floating inductors.

\*This paper was recommended by Regional Editor Piero Malcovati.

In Sec. 3 of Ref. 1, three well-known circuits realizing grounded inductors using Op Amps are reviewed and are transformed to floating inductor circuits based on the basic idea given in Refs. 2 and 3.

Most recently a short paper was published in this journal<sup>10</sup> with the same title as my paper in Ref. 1. It is mainly commenting on Sec. 3.3 which discussed the Orchard–Willson single Op Amp gyrator circuit.<sup>8</sup> It was pointed out that two letters published in 1978 by the author of Ref. 10 are not cited in Ref. 1.

The main key references including the basic idea for the review given in Sec. 3 are referenced properly in Ref. 1 and are cited below as Refs. 2 and 3. The work in Ref. 2 is 1975 and in Ref. 3 is 1971 which are several years before the two letters pointed out in Ref. 10 were published.

Although the basic idea used in Sec. 3.3 is due to the pioneering work published in Refs. 2 and 3 it resulted in new circuits as given in Table 1 of Ref. 1 as the pathological voltage mirror (VM) and pathological current mirror (CM) were not known in the seventies. Both of the VM and CM were introduced in Ref. 11.

The main objective of Ref. 1 is to extend the work in Refs. 2 and 3 to transform current conveyor grounded inductors to floating inductors by replacing the current conveyor by the recently introduced floating current conveyor (FCCII).<sup>12</sup> This work could not be done in the seventies as FCCII introduced in Ref. 12 was not known at this time.

## Conclusion

The statement mentioned in Ref. 10 that I have not cited two letters published in 1978 by the author of Ref. 10 does not apply, since I have cited main key references introduced basic idea I have used in Sec. 3 of Ref. 1.

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