Editor's comments:

The paper deals with the use of a new formulation to analyze the temporal operation of capacitive dipoles. The idea and the work are interesting but the paper is too long and requires more valuation.

I propose :

□□ Abstract: specify the advantage of the method on the simulation and the operation of circuits (RC, ...). Also, specify the importance of this method compared to other methods.

Changed the ABSTRACT as per suggestion with objectivity

This work uses new formulation q (t) = c (t) * v (t) in RC circuits to verify the results that are obtained via classical circuit theory, for a case of classical loss less capacitor as well as fractional capacitor or super-capacitors. The use of this formulation is suited for Super-Capacitors, as they show fractional order in their behavior. This new formula is used to get the 'memory effect' that is observed in self-discharging of super-capacitors-that memorizes its history of charging profile…

Changed the ABSTRACT as per suggestion

Clearly specified that verification process is done to derive q(t) via circuit theory calculations to get i(t) the conventional way, and then this formula q (t) = c (t) * v (t) to get the same results for ideal loss less capacitor and then fractional capacitor

□ Introduction. Very long, we do not clearly see the context of the work, problematic in the fields (Super-capacitor, ...) to use the new formulation (q (t) = c (t) * v (t)). The authors treat and analyze the work in the introduction ???.

Shortened this Introduction and brought out the objectives of this paper. The relevance to fractional order application in super-capacitor all references given and recent verification of this new formula has been refereed in relating non linear capacity to charge in the experiment with capacitor, supercapacitor and constant phase element (CPE). Extra section is devoted for fractional order capacitors.

□ Paragraphs 2 to 12: too long, many calculations and equations. To value the idea and better understand this new approach, the authors must present just the essential point, for the application 'Super-capacitor', since it is scientific article. I propose to the authors:

Made the Subsections in order to shorten the paragraphs.

Please note the Mathematical tricks are not readily available in the fractional calculus context, thus elaborate steps are placed in order to show clarity-since this is a new deliberation. The treatment is new though lengthy it may look, but is very advantageous for the researchers dealing with fractional calculus and circuits and systems and apply new formula_q (t) = c (t) * v (t)_ - since the mathematics steps are not easy, the derivational details are kept for readers who are unfamiliar with the subject. Reducing this will be a difficult read for users.

* The capacity C depends on the time t? specify why? what application.

This is dealt in detail in earlier articles and is mentioned and cited, and applications are too

mentioned, with earlier references cited in detail.

* Description of the domain 'Super capacitor',

Given the super-capacitor domain and fractional order application with all the references included.

* Quick analysis of classic models and the new model,

The comparison is done in each of the cases, thus verifying this new formula q (t) = c (t) * v (t) –for ideal loss less capacitor and fractional capacitor and super-capacitor.

* Analysis of the RC circuit by the new method, specifying the advantage of the new method,

As mentioned that this new formula is getting applied in very limited sense very recently – one advantage that is cited as to encompass nonlinear capacitor charge relations that gets observed in super capacitors and constant phase element. This is a very new formula and what are the future plans to use this formula is mentioned in the conclusion section.

* Give traces of the simulations (charge/decharge, loss,...) of the new equations approach,

The charge discharge is similar to exponential rise and decay of normal cases-thus the simulations are not provided. However those are available in various works in references. Here idea was to match the analytically obtained results for verification of q = c*v formula that has been accomplished in each cases.

Simulation trace and Experimental result for self discharge phenomena in super capacitor given. Fig 2a 2b and 3.

* Discuss the experimental validation of this new approach,

Since this formula is very recent work in progress on experimental usage of this formula, however one very recent reference cited which has validated the formula q=c*v in supercapacitors and constant phase elements.

* Extend the analysis to another applications and electronic circuits?.

Yes will be taken up, as mentioned in the conclusion.

Author's feedback:

The points are answered as above in blue. Since this is a very new proposed formula, and has not seen much exposure till now, to have complete view of experiments and applications are not possible at this stage. This paper is just verifies the new formula in RC circuits and gives the new mathematical tricks and steps that are required in its application to RC circuits for this new formula of q = c* v. After the first article on this formula and its derivation was published in this journal , at least that is used by a group of researchers to have verification in field of supercapacitor and constant phase elements-experimentally (that paper is also cited). Presently there is not very much experimental validation (except one that is very

recent that is cited) – may be in future there is scope of experimental usage: after this formula gets established in standard circuits (that is one goal of this paper i.e. RC circuit). We will analytically take up LC and RLC and resonances later with this q = c* v , plus plan to apply in some analysis that listed in conclusion.