Report on revision of "Probabilities of tree topologies with temporal constraints and diversification shifts" by Gilles Didier. Let me thank the author for his detailed response and for his acknowledgment that the alternative method I proposed in my report could be of interest to the readers of PCI ("I hesitated for a while before deciding to submit a revision, since the method proposed by Amaury Lambert is far more elegant than the one of my manuscript (presenting a "complicated" approach while there is a simpler one which performs the exact same task would be pure sadism). I eventually convince myself that the approach of the manuscript may still deserve interest because (i) from a computational point of view, it has the exact same order of complexity as that of Amaury Lambert and (ii) the general idea of this approach can actually be applied in a wider range of situations").

Let me first say that if the orders of complexity of the two methods are indeed both quadratic, the multiplicative constants are very different. Also, I am a little surprised by the lack of reference to this method in the new version. Since I don't plan to publish the proposed method, I think it would deserve to be exposed briefly in the manuscript as an alternative to the author's, at least in the case with no rate shift (although I believe shifts could be accounted for in this framework as well). Anyway, even in the case the author prefers to decline this suggestion (by for example merely alluding to my report in the text), I firmly believe that it is wrong to keep citing [10] like p2 or in Section 7.1 while claiming there is no clear way of extending the CPP approach.

Minor comments.

- use of notation $\dot{p}$ or $\ddot{p}$ should be avoided, especially for quantities depending on time - this notation canonically refers to time derivatives
- English should be revised ("allows to" is not correct, notation should always be singular, "this" is used several times instead of "these", + some weird bits like: "two type of event may occur", "A important point", "several set of parameter leads to the same probability distributions", "the branchs evolves"...)
- p4 l7 "0" should be "N" in the argument of Q_Θ
- p5 l-5: "distinguished for some reason" is awkward
- p6 "n" should be "N" twice on the same page
- p7 - I believe that the new, long paragraph on the bottom of p7 is clear only if you have already understood what's going on...
- p9 the function g needs not be defined twice (or you need another notation), and the functions f and g could be defined with an argument which is plainer symbolically than that used in the equation where f and g are introduced
- p12 paragraph before Section 7.1: I find it weird to pinpoint identifiability issues without dealing with them: shouldn't the author propose an identifiable parameterization?
- p13 Lemma 1. I think that "a time in (x_i, x_{i+1})" is no longer needed.
- p24 The initialization of the induction is wrong (case when there is no time constraint).