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Title : Structural and Seismic Monitoring of a Monumental Building: the Case Study of the Royal Castle of Racconigi

Author : Gianni Niccolini, Amedeo Manuello, Elena Marchis, Alberto Carpinteri

The authors' aim is to check the potential of a novel approach for detecting entrance to "critical conditions" that is based on the Natural Time concept. In this direction data recorded with the aid of the "Acoustic Emissions" technique are used.

In terms of a general overview:

- The content of the manuscript falls within the scope of "*Natural Hazards and Earth System Sciences*".
- The title of the manuscript does not properly reflect the content of the manuscript.
- The structure of the text should be reconsidered as it is described in the next section of this review.
- The conclusions drawn could be of interesting for the community of scientists working in the direction of detecting pre-failure indicators.
- The Reference list covers the field according to a satisfactory manner.

In terms of a detailed review, there are some critical points that, according to my opinion, should be taken into account by the authors. The revised manuscript must then be re-submitted for review. These points are described in the following paragraphs:

**1. The structure of the manuscript:**

To my opinion the length of Section 2 is disproportionally long. The architectural and historical details are of minor importance (although could be of interest for the readers of journal oriented to Cultural Heritage themes) and the content of the specific section is rather irrelevant to the main target of the manuscript. The section should be drastically shortened, most of its figures must be removed, and then it could become part of the Introduction. On the contrary Section 4 should be analysed according to a much more detailed manner. Quite a few details concerning the way the raw data were processed are missing.

**2. The title of the manuscript:**

The title of the contribution is somehow misleading or overambitious. The authors did not monitor a Monumental Building but rather a specific structural element of the building. Moreover the technique (Acoustic Emission) used to monitor the element should be somehow reflected in the title and the same is true for the analysis technique (Natural time).

**3. Assumptions adopted must be justified:**

This is, for example, the case of the statement "*In particular, the increased AE rate marked by a vertical dashed line in the top diagram of Fig. 5 can be regarded as a signature of unstable damage accumulation*" (p.7, lines 5-7). I am not convinced that **any increase of the AE rate** is a sign of **unstable** damage accumulation.

Along the same line the authors should justify their choice for "*... partitioning the time window preceding the considered seismic event into three sub-intervals (0-80h; 80h-285h; 285h-485h) roughly containing the same number of AE events*" (p.11, lines 6-9). What is the criterion for dividing the overall time interval into three sub-intervals and why the specific ones were chosen?

**4. Some qualitative statements and conclusions should be quantified:**

For example it is stated that “...*a progressive reduction of the highest frequencies, i.e., between 400 and 800 kHz, is observable as the seismic event was approached*” (p. 11, lines 9-10). What is the magnitude of this reduction? Is this reduction significant and on what basis of comparison?

**5. Some typing errors must be corrected and some sentences should be rephrased.**

Although from a linguistic point of view the manuscript is very well written, some points must be considered, as follows:

**5.1** p.6, lines 1-2. The sentence should be rephrased.

**5.2** p.8, line 17. The sentence contains a duplication of words.

**5.3** p.8, lines 22-26. This is a very long sentence and must be rephrased.

**5.4** p.12, line 1: “*On the other hands*” must be written “On the other hand”.

Taking into account the as above thoughts, I believe that the manuscript could be accepted for publication, assuming that the authors would properly revise their manuscript according to the above mentioned comments.

In this context my suggestion at this stage of the review process is:

**Revision and re-review.**