Interactive comment on "Solving the orientation problem for an automatic magnetic observatory" *by* A. Khokhlov et al.

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The referee has made two major comments.

1. However, the title "Solving the orientation problem..."

is a bit misleading as the paper only adresses a specific aspect of the problem. Indeed, the very authors mention it when telling they do not adress the all important problem of pier motion and strain. Maybe the authors should add "Contribution to..." to the title.

We have considered his suggestion and the title is changed. It is true that we don't address the full problem. Note that, to our knowledge, no data allow to make any estimation of the pier motion and strain. Certainly some observers have made experiments (we did in Chambon la Foret observatory), but the results have not been published. Old

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unsolved problem. We can only build the best pillar and the most "rigid" apparatus. We stress this point in Discussion.

2. I believe some data processing on the raw data would be necessary to smooth this out. Certainly we can expect more low frequency noise entering the data than for frequent absolutes.

Indeed, at each new calibration, there is a step change in the data series provided by the automatic observatory; but of the order of magnitude of the calibration error discussed in the paper (that is why it is fortunate that it is small). Smoothing the steps is to be considered. But, in the absence of extra information it is difficult to do more than a linear interpolation between two steps. We add a comment in the Discussion part.

The two detailed comments have been considered in the new version.

——————— New paragraphs in Discussion and Conclusion Part.

We also note that the question of the stability of the pillar or of the rigidity of the magnetometer has not been considered here. To our knowledge, there are no available data to make any good estimation of the stability of the pillars. Therefore, it is important to build the best possible pillar and retain an adequate magnetometer. Let us also stress that at each new calibration, a step in the series provided by the observatory is happen; but it is only of the magnitude discussed above, i.e. small. Smoothing the small steps may be considered; in the absence of extra information, no better technique than a linear correction between the two calibrations, distant by one year or so, exists.

Considering the above precisions, can function as an automatic observatory fitting INTERMAGNET standards for a time-span of one to a few years, depending on the amplitude of the secular variation. A special study is necessary in the case of the highest latitude observatories. The necessity of a visiting the station every other year or so to renew the calibration is not so hard a constraint; in any case, such visits should be nec-

essary for other purposes and checking, of instruments and environmental conditions.

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