LIGHT BULB LAB
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Correlation (Or Not) of Variable Light Bulbs and Host Classrooms

Light Bulb Lab[1]

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ABSTRACT

We present a study on light bulb brightness variability derived from about two years of observations. We collected data in four different classrooms using visual inspection. Various methods and combinations to alter the lightbulb brightness are discussed and weather influence has also been considered. We also construct sample scaling relations to further assess their applicability.

Key words: radiative transfer – lightbulb – variability – Monte Carlo

1 INTRODUCTION

Since the early days when we entered the Navile headquarters, strange lightbulbs behaviour was observed. Most influential was the discovery of a tight correlation between the lighting of H and I classrooms. This *malippo* (mess) complicated the conduct of optics experiments causing the dissatisfaction of various professors. Later it was discovered that not only those two classes shared the same lighting control system, but weather conditions were having some non-negligible effects. We were the first to carry out tests to constrain the source of the problem. Three lined up light switches were found in each classroom. At the beginning we tried all the possible combinations between switches in I classroom and results were published there (they are now hanging on the wall) (LBL, 2017).

This year we performed the same experiment in classroom L, but instead of trying all the possible combinations, we did some Monte Carlo simulations. Results were published there. New results are now replacing this simple story with a richer and more plausible picture in which Light Bulbs brightness does not correlate with Host Classrooms.

2 THE SAMPLE

We collected data in four different classrooms using visual inspection. Classrooms I and L are now well studied, but we lack precise measurements in classrooms H, M and N. The current instrumentation (eyes) tends to favour the discovery of big variability. Therefore we do not guarantee the completeness of the sample.

3 RESULTS

In the pioneering work of Light Bulb Lab (LBL, 2017) many observations were done in order to understand the light variability. Artificial alterations were done applying a small amount of pressure on every light switch. However this does not prevent lightbulbs spurious dimming. Those natural variations of brightness are hereby plotted (Figg. 1 & 2). With our two-object sample we demonstrate that there is not any tight correlation between Light Bulbs and Host Classrooms.

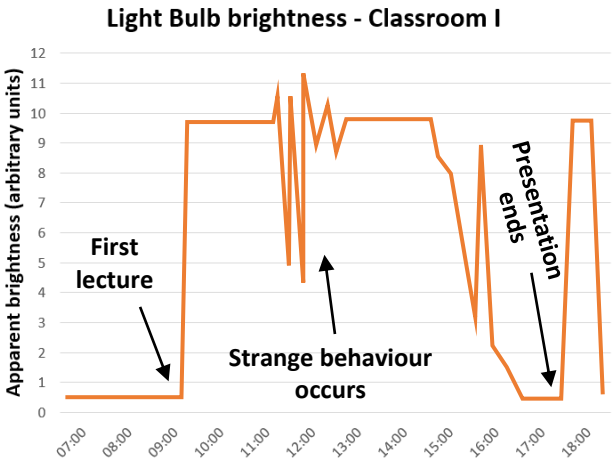

Fig 1. An example of light bulb brightness variability observed in classroom I. We are still unable to justify the steep rise of apparent brightness after 17:00

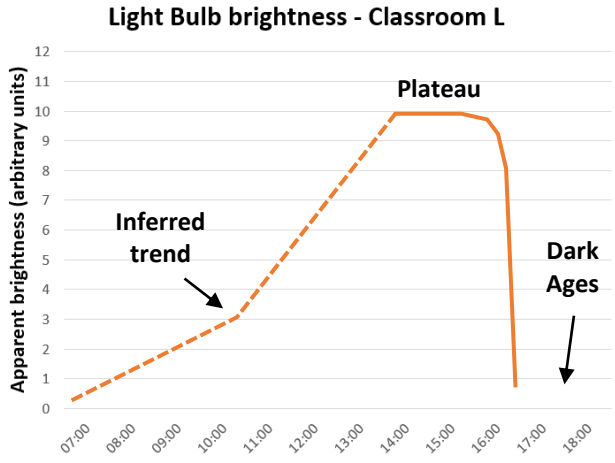

Fig 2. Light curve observed in classroom L. No spurious variabilities recorded.

4 CONCLUSIONS

We infer that light bulbs brightness does not correlate with their host classrooms. Light bulbs brightness - weather conditions correlation has also been rejected. In order to better understand the reasons that lead to a high probability of light dimming in classroom I, follow up observations (recording the time of the event} are of primary importance.

We still must improve our knowledge about all the uncommon physical phenomena occurring in this building. Further observations are needed to constrain the sources of light variability. New models regarding non-periodic unexpected shutdowns of projectors are still in their embryonic stages. There is also new evidence for cooling flows as suggested in the next article of this publication.

We acknowledge the help of many other students for their analysis of those phenomena. We also acknowledge DIFA and programmatic support via 2x1 discounts in vending machines.