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No evidence of a solar diameter change during the Maunder Minimum from measurements made in the Basilica of San Petronio

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We analyze the measurements of the solar diameter made at the Basilica of San Petronio (Bologna, Italy) from 1655 to 1736 using a meridian line. This series includes the Maunder Minimum, a period of abnormally low solar activity between 1645 and 1715. Some authors have suggested an increase of the solar diameter during the Maunder Minimum. We have applied statistical analyses to compare the solar diameter measured at San Petronio during the Maunder Minimum (1655–1715) and that in a subsequent period (1716–1736). No statistically significant differences are found in the medians and averages of the solar diameter in both periods. In fact, we have found differences around 0.6", which are below the mean accuracy of the instrument. Therefore, we conclude that there is no difference between the solar diameter value measured during the Maunder Minimum (1655–1715) and that for the subsequent period (1716–1736).

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