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Seismic Eruption Catalog of Strokkur Geyser, Iceland

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Geysers are hot springs whose frequency of water eruptions remain poorly understood. We setup a local broadband seismic network for one year at Strokkur geyser, Iceland, and developed an unprecedented catalog of 73,466 eruptions. We detected 50,135 single eruptions, but find that the geyser is also characterized by sets of up to six eruptions in quick succession. The number of single to sextuple eruptions exponentially decreased, while the mean waiting time after an eruption linearly increased (3.7 to 16.4 min). While secondary eruptions within double to sextuple eruptions have smaller mean seismic amplitudes, the amplitude of the first eruption is comparable for all eruption types. We statistically assess and model the eruption frequency assuming discharges proportional to the eruption multiplicity and a constant probability for subsequent events within a multi-tuple eruption. We conclude that the waiting time after an eruption is predictable, but not the type or amplitude of the next one.