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論文題目： Measurement of Charged Particle Emission Rates and Energy Spectra After Muon Nuclear Capture in Aluminium.
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論文要旨：

The Aluminium Capture (AlCap) experiment aims to measure low energy charged particle emission after nuclear muon capture in aluminium, silicon and titanium. These are important in understanding muon induced backgrounds in modern muon to electron conversion experiments. AlCap also explored multiple muonic x-ray measurement methods using different peaks that could be used for muon normalization. The run time of AlCap R2015b for aluminium is 25.7 hours, obtaining a total of 1.04×10^8 stopped muons from the muonic 2p-1s transition, which is about 10 times more than previously in 2013 (R2013). R2013 accumulated over a time period of 16.9 hours, a total of 9.16×10^6 stopped muons. The main purpose of this work is to confirm the previous results obtained in 2013, obtain spectra and rates for other charged particles and explore the possibility of muon normalization using the higher resolution proton emission spectrum on the COMET drift chamber. This work also reports the first measurement of deuteron and triton emission rate and their energy spectra in addition to proton measurements. The number of detected protons are also 10 times more than the previous run in 2013, with an average left-right emission rate of 3.33±0.20% for the energy range from 2.5 to 10MeV. This is in agreement with the previous result of 3.5±0.2%. New results for other charged particles include the emission rate of deuterons in the energy range from 2.5 MeV to 15MeV is 0.74±0.05%. Also, the emission rate of tritons the energy range from 2.5 MeV to 17MeV is 0.15±0.02%.