

Abstract Submitted
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Scaling up a Peltier-powered cloud chamber¹ TYLER SITTERLY,
MATTHEW BELLIS, Siena College — Nuclear and particle physics attracts the
interest of many students, both at the K-12 and college level. While students can
learn much from books and videos, there are few devices that let them interact with
radiation or particle accelerators in real life, for obvious safety reasons. One such
device is the cloud chamber, which creates a temperature gradient to produce a
supersaturated alcohol vapor that condenses around trails left by charged particles
from radioactive sources or secondary cosmic rays. Cloud chambers are usually
made in the classroom using dry ice, but the Siena group has worked for 5+ years
to improve the design of Peltier thermoelectric-powered coolers that allow the user
to simply plug in the chamber and so avoid the dry ice. In this poster, we describe
our efforts to scale up this design, which used a Petri dish as the viewing area, to
create a larger active volume by incorporating of three times the number of Peltiers
and a water-cooling system. The current status of this project will be presented.

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