Software Geometry in Simulations TYLER ALION, University of
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Fermilab National Laboratory, LBNE COLLABORATION[3] — The Long Baseline
Neutrino Experiment (LBNE) involves many detectors. The experiment's near de-
tector (ND) facility, may ultimately involve several detectors. The far detector
(FD) will be significantly larger than any other Liquid Argon (LAr) detector yet
constructed; many prototype detectors are being constructed and studied to mo-
tivate a plethora of proposed FD designs. Whether it be a constructed prototype
or a proposed ND/FD design, every design must be simulated and analyzed. This
presents a considerable challenge to LBNE software experts; each detector geome-
try must be described to the simulation software in an efficient way which allows
for multiple authors to easily collaborate. Furthermore, different geometry versions
must be tracked throughout their use. We present a framework called General Ge-
ometry Description (GGD), written and developed by LBNE software collaborators
for managing software to generate geometries. Though GGD is flexible enough to be
used by any experiment working with detectors, we present it's first use in generating
Geometry Description Markup Language (GDML) files to interface with LArSoft, a
framework of detector simulations, event reconstruction, and data analyses written
for all LAr technology users at Fermilab.

[1]Brett is the other of the framework discussed here, the General Geometry Descrip-
tion (GGD).
[2]Tom advised on much of the efforts described here.
[3]The Long Baseline Neutrino Experiment (LBNE) is merging with other collabora-
tors into a new collaboration that will be named differently.

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