



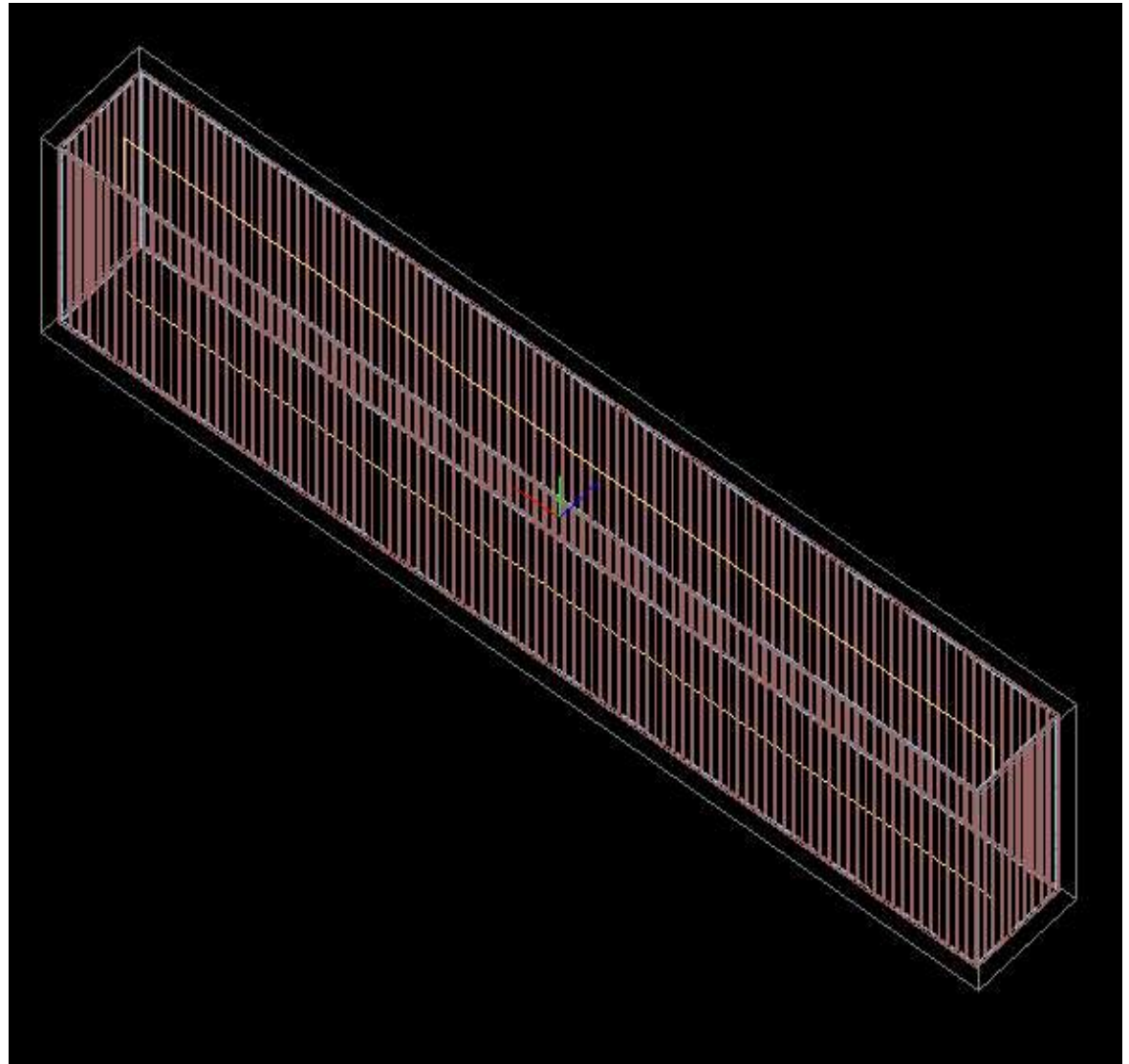
# **SuperNEMO bar design with SNOVA1**

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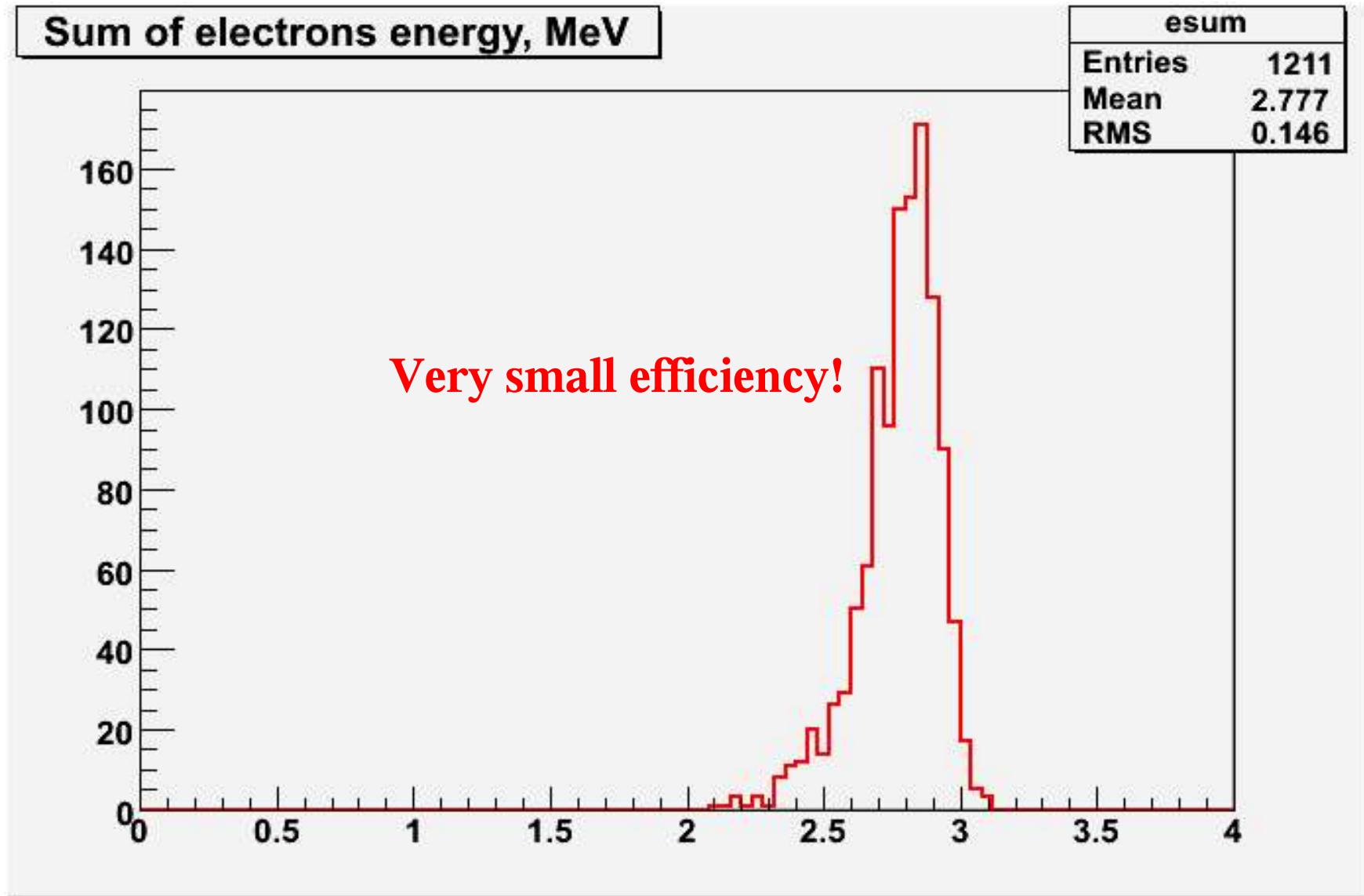


# SuperNEMO single module with bars

#SNOVA single module bar design:  
all detector: 10 x 10 x 2 m  
Scin bars: 2 x 12 x 200 cm  
Scin FWHM: 10%  
Other pars: as in basic design



# e1+e2 for Se-82 0nbb



# Simulations with Se-82 Onbb

+++ SNsoftTrigger finalize +++  
++ Number of events: 10000  
++ Number of selected events: 4834  
++ Bad number MC gg hits: 72  
++ Bad number MC cal hits: 4326  
++ Not minimum energy: 840  
  
+++ Init function of SEventSelector +++  
++ Energy resolution: 0.0424809  
++ Sci decay time: 4.3  
++ PM transit time: 0  
Number of events read 0  
Same cal hit, but good true event! 18  
(15 messages like one above)  
Number of events read: 4835  
Number of events written: 1212  
  
+++ SEventTrigger finalize +++  
++ Number of events: 4834  
++ Number of selected events: 4645  
++ Bad number MC gg hits: 0  
++ Bad number MC cal hits: 189

+++ finalize SEventSelector +++  
++ Events analyzed: 4645  
++ Good MC events: 0  
++ bb events selected: 1211  
  
+++++ True MC analysis +++++  
with 2 tracks 4588  
with 2 tracks, reflected to source 807  
with 2 tracks, backscattered from plastic 520  
with 2 tracks, reflected & backscattered 264  
with 2 tracks hit scintillators 4477  
with 2 tracks hit scintillators, reflected 762  
with 2 tracks hit scintillators, backscattered 491  
  
good 2 tracks with hit (not reflected  
or backscattered) 3471  
with good number of extra GG hits 3294  
with good number SC hits 3119  
Total 2 good electrons selected 3017

# Simulation with Se-82 Onbb

## ++++++ Track selection cuts ++++++

Tracks analyzed: 10626  
with good fit chi2: 10626  
with good charge: 10626  
with good vertex: 5305  
with good length: 0

## ++++++ Sci hit association cuts ++++++

Tracks analyzed: 5244  
with associated hit: 4683  
with good chi2: 4667  
with good energy: 4667

## ++++++ Event selection cuts ++++++

Events analyzed for selection: 4645  
Good tracks: 5244

**Good tracks good cal hit: 4667 (Major lost here!)**

**Events with good number of tracks: 1847**

Events with good number cal hits: 1599

## ++++++ 2B selection cuts ++++++

Events selected: 1599  
with isolated hits: 1566  
with common vertex: 1510  
with good N free GG hits: 1347  
with good N of SC hits: 1256  
with internal prob: 1211  
with no external prob: 1211  
with 2.65 MeV cut for TL208 applied: 1211  
Events selected as good in both DIGI & TRUE:  
1166

## ++++++ End method of EventManager ++++++

Total number of events read: 4835  
Total number of events written: 1212

# Plans

Continue sensitivity studies for single module SuperNEMO bar design.

Problem with tracking efficiency. Why?