

Geometries in PANDAROOT

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XXXI PANDA Collaboration Meeting - 7-11th December 2009

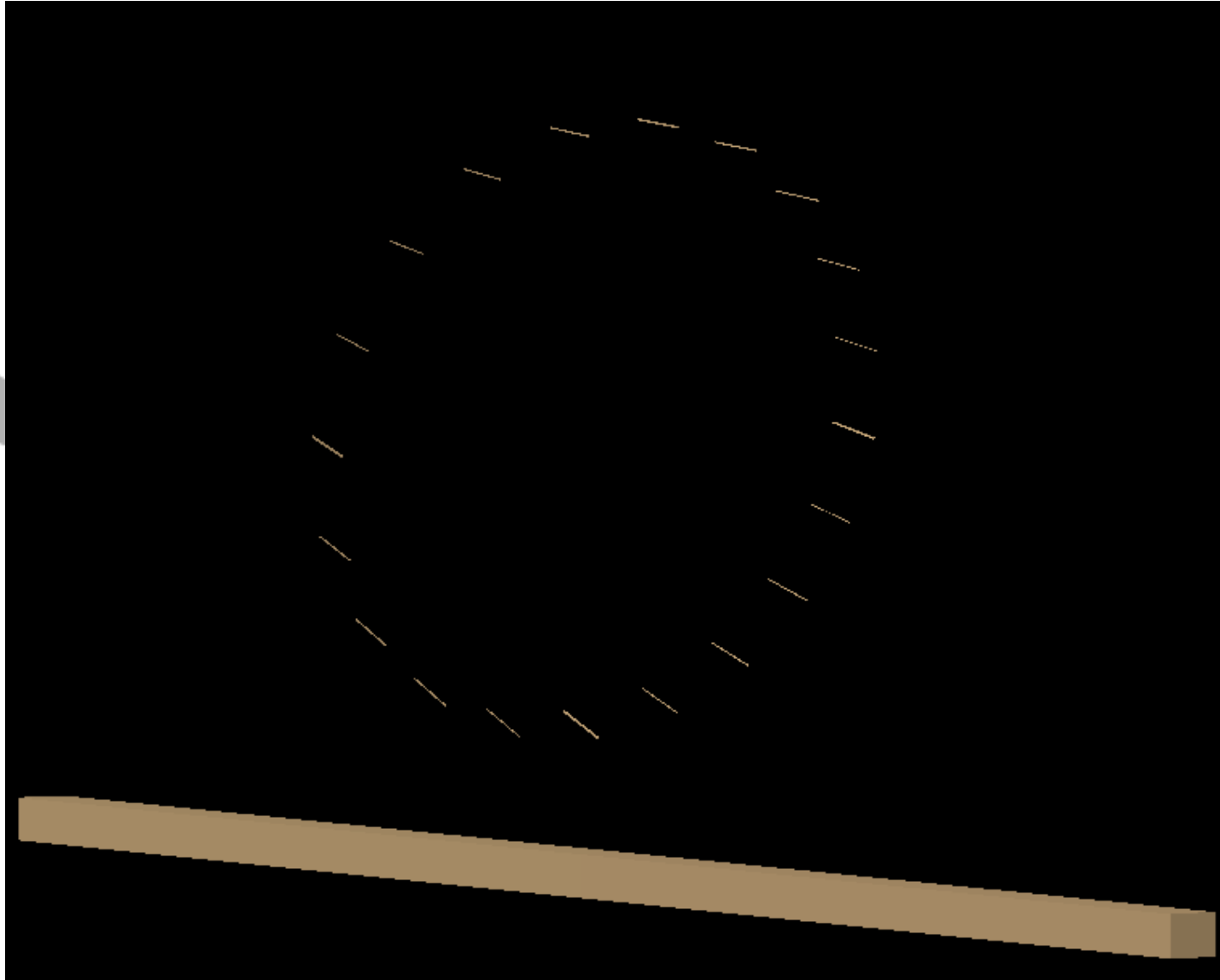
CAD \Rightarrow ROOT

Problems appear when the mid-point of the mother volume is not coincident with the geometrical midpoint of the contained shape.

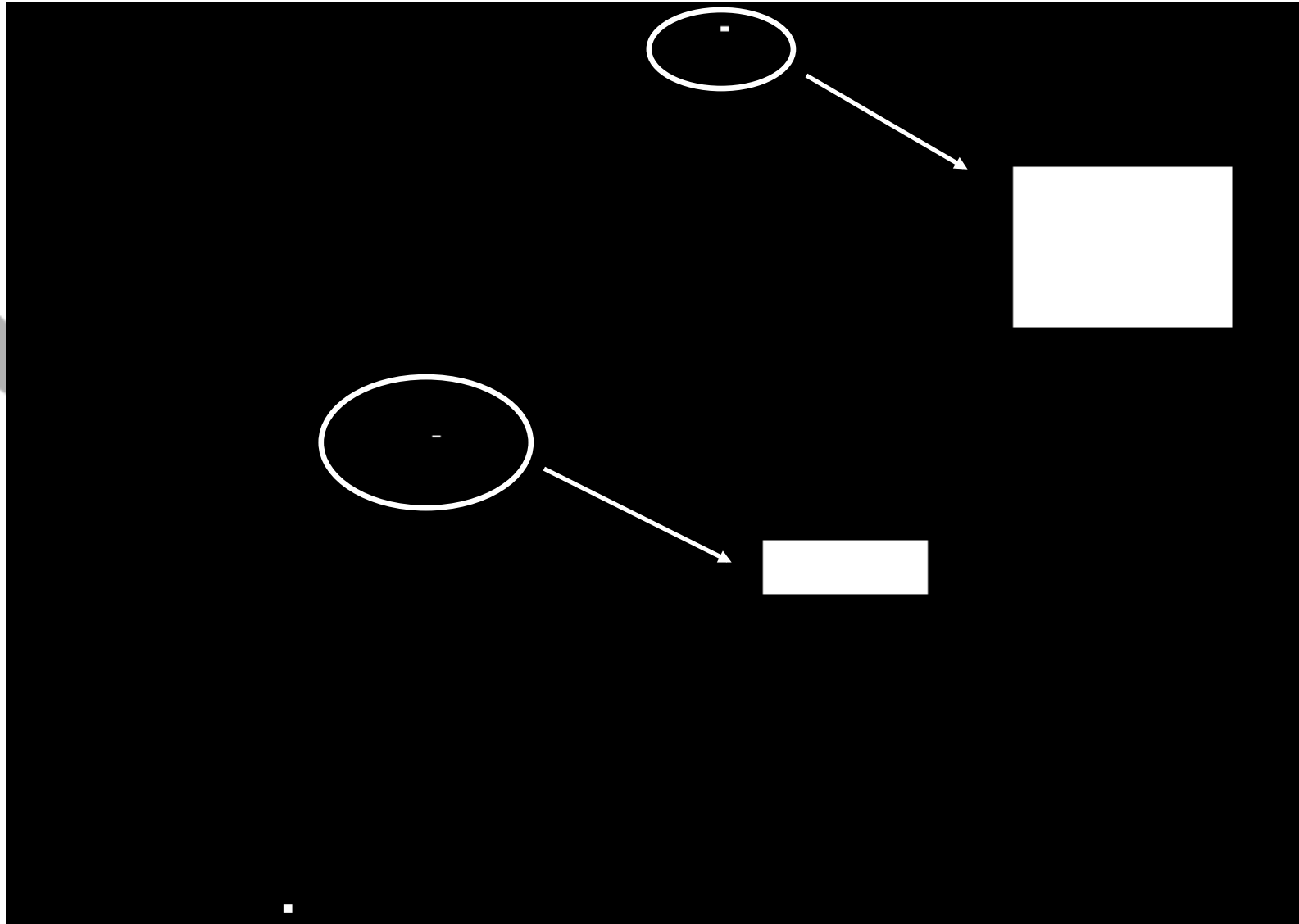
I experienced two different possible behaviours:

1. the geometry is not correctly converted
2. the geometry seems to be converted well but the propagation of particles through its components shows strange effects

1 - Wrong conversion



1 - Wrong conversion



1 - Wrong conversion

*** Shape Dummy0o1o1o1o10: TGeoBBox ***

dX = 0.02378

dY = 0.00773

dZ = 1.00000

origin: x= 0.00000 y= 0.00000 z= 0.00000

DESIGN SIZES

dX = 0.02500

dY = 0.02500

*** Shape Dummy0o1o1o1o1: TGeoBBox ***

dX = 0.02023

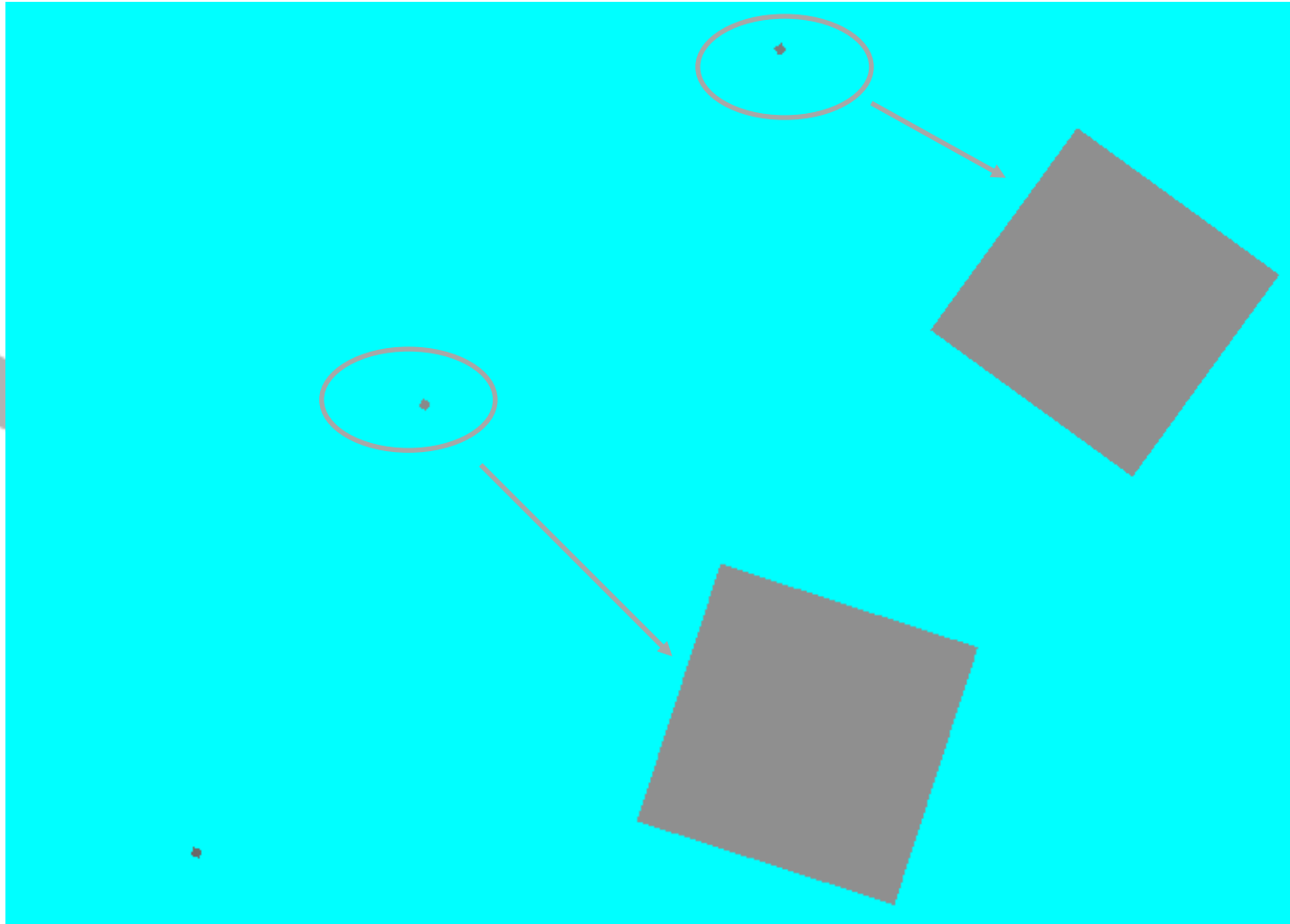
dY = 0.01469

dZ = 1.00000

origin: x= 0.00000 y= 0.00000 z= 0.00000

Sizes are changing as a function of their position (φ - angle)

1 - Wrong conversion - SOLVED



1 - Wrong conversion - SOLVED

*** Shape TestBin: TGeoBBox ***

dX = 0.02500

dY = 0.02500

dZ = 1.00000

origin: x= 0.00000 y= 0.00000 z= 0.00000

Setting correctly the mid-point I obtained the right sizes for the volumes

2 - Correct Conversion

Problems in the propagation of ptcs

- The geometry is correctly converted: the event display shows it nicely and the properties that I get inspecting the volume are correct,
- The propagation seems to be affected anyway, volumes correctly defined behave like empty ones



This is really difficult to recognize, especially when it happens on passive elements!

2 - Correct Conversion

Problems in the propagation of ptcs

This second class of problems appeared in studies that I performed in order to map the passive materials introduced in the MVD.

Actually I am not able to disentangle the effect of the CAD converter and the behaviour of the framework. Anyway, in both the situations setting correctly the mid point fixed the problem.

Conclusions

- The CAD converter is not always well working when the mid point of the volume is defined out of the real mid point of the shape;
- Pandaroot seems to have problems with this kind of volumes (also when they are correctly converted);
- Mid-point should be really placed in the center of the shape;
- **New geometries must be checked running dedicated scans (e.g. : radiation lengths studies, ...)**