

FP ORIGIN

C3D Parameter FORCE_PLATFORM:ORIGIN

The ORIGIN Vector

As described in the [C3D file format](#), the purpose of the ORIGIN vector is to provide a method for transforming the force vectors (as measured by the force platform's transducers) into the [laboratory coordinate system](#).

The specific interpretation of the ORIGIN vector varies according to the force platform's [type](#) and manufacturer. The C3D File Format's [Technical User Guide](#) provides some guidance and we have collected useful notes that we are aware of below. When in doubt, the best source of information is your force platform's manufacturer.

Manufacturer Notes

AMTI force platforms

The ORIGIN is the vector from the sensor coordinate system to the top center of the force platform surface. It is expressed in the force platform coordinate system, so the z-value is defined to be negative.

KISTLER force platforms

The ORIGIN is a vector comprised of the following components.

1. x= half the distance between the sensors along the force platform x-axis
2. y= half the distance between the sensors along the force platform y-axis
3. z= distance from the sensor coordinate system to the top surface of the force platform surface.
This value should be negative

BERTEC force platforms

The origin value varies with the type of BERTEC force platform. For recent Force Platforms, Bertec has elected to calibrate their force platforms differently from the other manufacturers.

- **NOTE 1:** For older platforms (identified by a CalMatrix that contains only diagonal elements), the ORIGIN is a constant value of (0, 0, -40.9)
- **NOTE 2:** For newer digital platforms, the CalMatrix has been computed assuming an ORIGIN value of (0, 0, 0)

BERTEC treadmills

Bertec uses an ORIGIN of (236,813,0) and (-236,813,0) for its instrumented treadmills.

- **NOTE 3:** This is a nuisance for Vicon users because Vicon stores the ORIGIN parameter incorrectly. For all other platforms, Visual3D can guess that the ORIGIN was stored incorrectly by checking the sign of the z-component of the ORIGIN. The c3d format requires the z-parameter to be negative and if the ORIGIN is stored with a positive value, then Visual3D multiplies all 3 components of the ORIGIN by -1. If the z-component is 0, then Visual3D cannot make a decision.

Vicon users with Bertec treadmills, should use a very small z-component 0.0001 so that Visual3D knows to multiply by -1.

Correcting FORCE_PLATFORM::ORIGIN parameters

The C3D file format is a public document that most hardware vendors currently export. We are only aware of one implementation of the format that has an inconsistency that Visual3D must handle explicitly.

The FORCE_PLATFORM:ORIGIN parameter (within the PARAMETER SECTION of the C3D file) describes the location of the working surface of the force platform relative to the force platform coordinate system. For AMTI force platforms the z-value of the origin should be a negative value. Visual3D can correct this value automatically should it read a positive value.

Should the user not want to have the program correct this value automatically, a dialog is available under the Properties menu item labelled "Use correct FORCE_PLATFORM:ORIGIN vector". In this dialog the user can select the check box "Perform automatic correction"(the default).

References

- The C3D File Format (<http://www.c3d.org>)

From:
<https://has-motion.com/wiki/> - Wiki Documentation Site

Permanent link:
https://has-motion.com/wiki/doku.php?id=visual3d:documentation:pipeline:force_commands:fp_origin&rev=1759753992

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