

DICOM Correction Proposal

STATUS	New
Date of Last Update	2019/12/18
Person Assigned	Christof Schadt
Submitter Name	Kari Jyrkkälä <kari.jyrkkala@varian.com>
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Correction Number	CP1966
Log Summary:	Explicitly define the order of pitch and roll rotations
Name of Standard	PS 3.3 2019e
Rationale for Correction:	<p>IEC6127 amendment 2 (2007) introduced pitch and roll angles to the IEC6127 table top coordinate system. The order how these angles should be applied is not explicitly defined, it is only implied by the order how they are introduced, and pitch is introduced first.</p> <p>C.8.8.14.12 'Table Top Pitch and Table Top Roll' of PS 3.3 describes in detail how translations and rotations shall be applied to the table top coordinate system. In figure C.8.8.14-2 the roll is applied to the Y' axis where Y' already contains the pitch applied to X axis. This is fine; however, this order should be explicitly defined in text section of C.8.8.14.12.</p>
Correction Wording:	

<i>Add to PS3.3 C.8.8.14.12</i>

C.8.8.14.12 Table Top Pitch and Table Top Roll

Pitch and Roll Coordinate Systems of the Table Top are defined in IEC 61217 Edition 1.2 2008-04. These angles are defined as rotations of the IEC Table Top System as indicated below.

The Table Top Pitch Angle is defined as the rotation of the coordinate axes Yt, Zt about axis Xt by an angle ψ_t ; See Figure C.8.8.14-1. An increase in the value of angle ψ_t corresponds to the clockwise rotation of the Table Top as viewed from the Table Top coordinate system origin along the positive Xt axis.

The Table Top Roll Angle is defined as the rotation of the coordinate axes Xt, Zt about axis Yt by an angle ψ_t ; See Figure C.8.8.14-2. An increase in the value of angle ψ_t corresponds to the clockwise rotation of the Table Top as viewed from the Table Top coordinate system origin along the positive Yt axis.

It is important to observe that the point of rotation is the origin of the table top system after the rotation of the PATIENT SUPPORT(s) system about Zs by θ_s after the rotation of the Table top eccentric rotation (e) system about Ze by θ_e and after the translation of Table top (t) system along Xe Ye Ze. This means that the rotation point of the Pitch and Roll angles is typically not the isocenter. The translational values Xt Yt Zt may need to be adjusted to preserve the patient position at the isocenter. e.g., a rotation of the Pitch angle by a positive angle at a position originally at Xt=0, Yt=100 and Zt=0 will lead to a negative Zt value and a slightly lower Yt if the patient position at isocenter is to be maintained.

The Pitch Angle rotation is applied before the Roll Angle rotation.

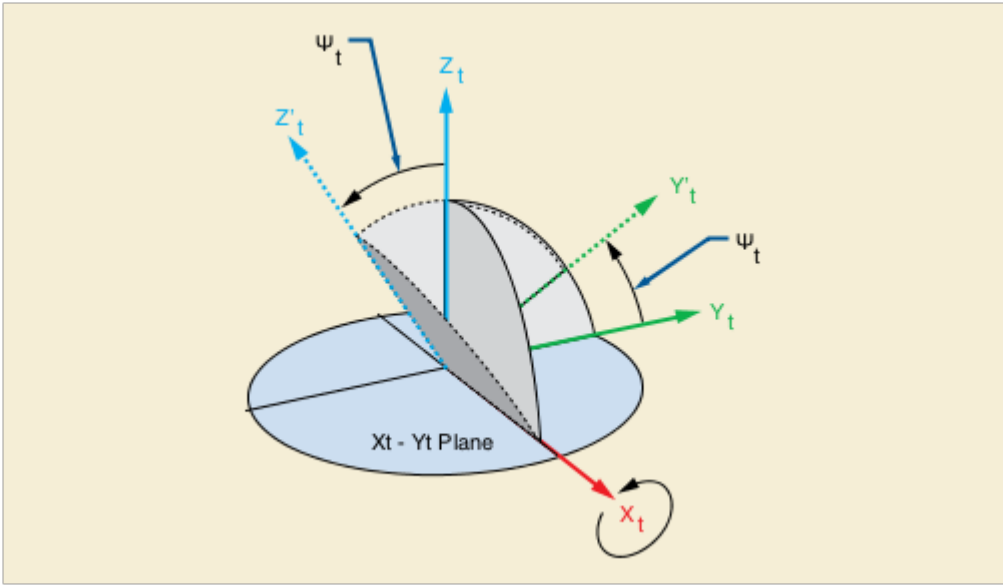


Figure C.8.8.14-1. Table Top Pitch Angle

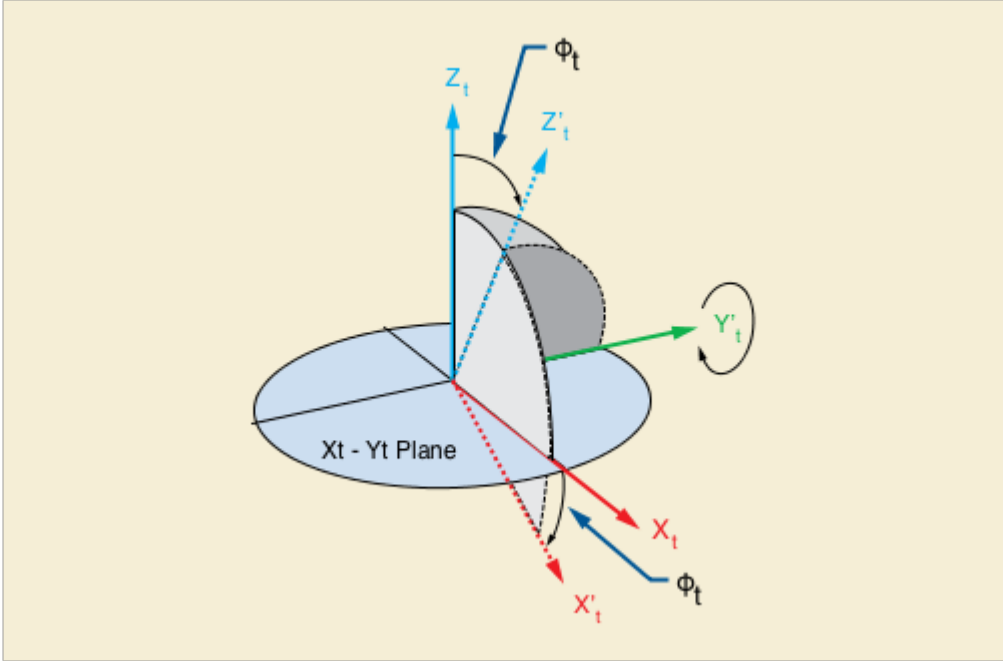


Figure C.8.8.14-2. Table Top Roll Angle