DICOM Correction Item

Correction Number CP-1010	
Log Summary: RT Applicator Enhancements	
Type of Modification Addition	Name of Standard PS 3 2009
Rationale for Correction: The term 'STEREOTACTIC' is a source of confusion. It refers more to the techniques used for patient positioning rather than to the type of applicator used. As treatment techniques have evolved, it is desirable to separate the concepts of photon-shaping applicators (now currently referred to as "STEREOTACTIC') from the patient setup and delivery techniques. Radiotherapy Applicators for external beam treatments do not have information about their geometric dimensions and the positions, where they are placed. This has both lead to complications in exchange of electron and stereotactic plans and also caused some uncertainties in respect to definition of applicator apertures. This change proposal adds these definitions. This change proposal streamlines the type definition and defines the geometry in a systematic way.	
Sections of documents affected PS 3.3 2008, PS 3.6 2008	
Correction Wording:	

In PS 3.3, Section C.8.8.14 (RT Beams Module), Table C.8-50, add the following attributes after Applicator Description (300A,00CA):

Attribute Name	Tag	Type	Attribute Description
Beam Sequence	(300A,00B0)	1	Introduces sequence of treatment beams for current RT Plan. One or more items may be included in this sequence.
>Applicator Sequence	(300A,0107)	3	Introduces sequence of Applicators associated with Beam. Only a single item shall be permitted in this sequence.

Attribute Name	Tag	Type	Attribute Description
>>Applicator Type	(300A,0109)	1C	Type of Applicator. Required if Applicator Sequence (300A,0107) is sent. Defined Terms: ELECTRON_SQUARE = square electron applicator ELECTRON_RECT = rectangular electron applicator ELECTRON_CIRC = circular electron applicator ELECTRON_SHORT = short electron applicator ELECTRON_OPEN = open (dummy) electron applicator **PHOTON_SQUARE = square photon applicator** **PHOTON_RECT = rectangular photon applicator** **PHOTON_CIRC = circular photon applicator** INTRAOPERATIVE = intraoperative (custom) applicator STEREOTACTIC = stereotactic applicator **(deprecated)**
>>Applicator Geometry Sequence	**(300A,0431)**	**3**	**Describes the applicator aperture geometry. Only one item may be present.**
>>>Applicator Aperture Shape	**(300A,0432)**	**1**	**Aperture shape of the applicator.** **Defined terms:** **SYM_SQUARE: A square-shaped aperture symmetrical to the central axis.** **SYM_RECTANGLE: A rectangular-shaped aperture symmetrical to the central axis.** **SYM_CIRCULAR: A circular-shaped aperture symmetrical to the central axis.**
>>>Applicator Opening	**(300A,0433)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system. In case of square-shaped applicator contains the length of the sides of the square. In case of circular-shaped applicators, contains the diameter of the circular aperture. Required, if Applicator Aperture Shape (300A,0432) is SYM_SQUARE or SYM_CIRCULAR.**
>>>Applicator Opening X	**(300A,0434)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system in X-Direction. Required, if Applicator Aperture Shape (300A,0432) is SYM_RECTANGLE.**
>>>Applicator Opening Y	**(300A,0435)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system in Y-Direction. Required, if Applicator Aperture Shape (300A,0432) is SYM_RECTANGLE.**
>> Source to Applicator Mounting Position Distance	**(300A,0436)**	**3**	**Radiation source to applicator mounting position distance (in mm) for current applicator.**

In PS 3.3, Section C.8.8.2 (RT Image Module), Table C.8-38, add the following defined terms to Applicator Type (300A,0109), and add the following attributes after Applicator Description (300A,010A):

Attribute Name	Tag	Type	Attribute Description
>Applicator Sequence	(300A,0107)	3	Introduces sequence of Applicators associated with Beam. Only a single item shall be permitted in this sequence.
>>Applicator ID	(300A,0108)	1	User or machine supplied identifier for Applicator.
>>Applicator Type	(300A,0109)	1C	Type of Applicator. Required if Applicator Sequence (300A,0107) is sent. Defined Terms: ELECTRON_SQUARE = square electron applicator ELECTRON_RECT = rectangular electron applicator ELECTRON_CIRC = circular electron applicator ELECTRON_SHORT = short electron applicator ELECTRON_OPEN = open (dummy) electron applicator **PHOTON_SQUARE = square photon applicator** **PHOTON _RECT = rectangular photon applicator** **PHOTON _CIRC = circular photon applicator** INTRAOPERATIVE = intraoperative (custom) applicator STEREOTACTIC = stereotactic applicator **(deprecated)**
>>Applicator Description	(300A,010A)	3	User-defined description for Applicator.
>>Applicator Geometry Sequence	**(300A,0431)**	**3**	**Describes the applicator aperture geometry. Only one item may be present.**
>>>Applicator Aperture Shape	**(300A,0432)**	**1**	**Aperture shape of the applicator.** **Defined terms:** **SYM_SQUARE: A square-shaped aperture symmetrical to the central axis.** **SYM_RECTANGLE: A rectangular-shaped aperture symmetrical to the central axis.** **SYM_CIRCULAR: A circular-shaped aperture symmetrical to the central axis.**
>>>Applicator Opening	**(300A,0433)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system. In case of square-shaped applicator contains the length of the sides of the square. In case of circular-shaped applicators, contains the diameter of the circular aperture. Required, if Applicator Aperture Shape (300A,0432) is SYM_SQUARE or SYM_CIRCULAR.**
>>>Applicator Opening X	**(300A,0434)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system in X-Direction. Required, if Applicator Aperture Shape (300A,0432) is SYM_RECTANGLE.**

Attribute Name	Tag	Type	Attribute Description
>>>Applicator Opening Y	**(300A,0435)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system in Y-Direction. Required, if Applicator Aperture Shape (300A,0432) is SYM_RECTANGLE.**
>> Source to Applicator Mounting Position Distance	**(300A,0436)**	**3**	**Radiation source to applicator mounting position distance (in mm) for current applicator.**

In PS 3.3, Section C.8.8.21 (RT Beams Session Record Module), Table C.8-57, add the following defined terms to Applicator Type (300A,0109), and add the following attributes after Applicator Description (300A,010A):

Attribute Name	Tag	Type	Attribute Description
>Applicator Sequence	(300A,0107)	3	Introduces sequence of Applicators associated with Beam. Only a single item shall be permitted in this sequence.
>>Applicator ID	(300A,0108)	1	User or machine supplied identifier for Applicator.
>>Accessory Code	(300A,00F9)	3	An identifier for the accessory intended to be read by a device such as a bar-code reader.
>>Applicator Type	(300A,0109)	1C	Type of Applicator. Required if Applicator Sequence (300A,0107) is sent. Defined Terms: ELECTRON_SQUARE = square electron applicator ELECTRON_RECT = rectangular electron applicator ELECTRON_CIRC = circular electron applicator ELECTRON_SHORT = short electron applicator ELECTRON_OPEN = open (dummy) electron applicator **PHOTON_SQUARE = square photon applicator** **PHOTON_RECT = rectangular photon applicator** **PHOTON_CIRC = circular photon applicator** INTRAOPERATIVE = intraoperative (custom) applicator STEREOTACTIC = stereotactic applicator **(deprecated)**
>>Applicator Description	(300A,010A)	3	User-defined description for Applicator.
>>Applicator Geometry Sequence	**(300A,0431)**	**3**	**Describes the applicator aperture geometry. Only one item may be present.**

Attribute Name	Tag	Type	Attribute Description
>>>Applicator Aperture Shape	**(300A,0432)**	**1**	**Aperture shape of the applicator.** **Defined terms:** **SYM_SQUARE: A square-shaped aperture symmetrical to the central axis.** **SYM_RECTANGLE: A rectangular-shaped aperture symmetrical to the central axis.** **SYM_CIRCULAR: A circular-shaped aperture symmetrical to the central axis.**
>>>Applicator Opening	**(300A,0433)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system. In case of square-shaped applicator contains the length of the sides of the square. In case of circular-shaped applicators, contains the diameter of the circular aperture. Required, if Applicator Aperture Shape (300A,0432) is SYM_SQUARE or SYM_CIRCULAR.**
>>>Applicator Opening X	**(300A,0434)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system in X-Direction. Required, if Applicator Aperture Shape (300A,0432) is SYM_RECTANGLE.**
>>>Applicator Opening Y	**(300A,0435)**	**1C**	**Opening (in mm) of the applicator's aperture in IEC BEAM LIMITING DEVICE coordinate system in Y-Direction. Required, if Applicator Aperture Shape (300A,0432) is SYM_RECTANGLE.**
>> Source to Applicator Mounting Position Distance	**(300A,0436)**	**3**	**Radiation source to applicator mounting position distance (in mm) for current applicator.**

In PS 3.6, Section 6, add the following new attributes:

Tag	Name	VR	VM
(300A,0431)	**Applicator Geometry Sequence**	**SQ**	**1**
(300A,0432)	**Applicator Aperture Shape**	**CS**	**1**
(300A,0433)	**Applicator Opening**	**FL**	**1**
(300A,0434)	**Applicator Opening X**	**FL**	**1**
(300A,0435)	**Applicator Opening Y**	**FL**	**1**
(300A,0436)	**Source to Applicator Mounting Position Distance**	**FL**	**1**