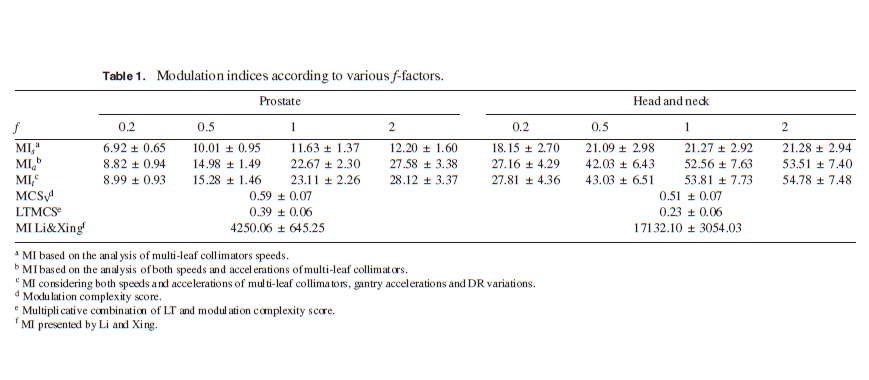
**VMAT TRF(Treatment Delivery System) file analysis with RTplan DICOM(TPS)**

* Target Dose: 61.6Gy/28fx
* Total MU: 643.5
* Number of control points: 147
* Max. Gantry Speed (TPS): 6 deg/s
* Max. Dose Rate (720MU/min)
* Max. num of Arc: 1

Inspired by Park, J. M., they consider leaf speed, leaf acceleration, gantry speed and dose rate in QA metrics, found the MI\_s, MI\_a, MI\_t had high correlation with gamma passing criteria results in VMAT plan. But the conventional QA metrics like MCS/LTMCS seems in-correlated with VMAT QA results.

**(Mateirals):**

* 20 NPC and 20 Prostate VMAT plans
* Eclipse System (two full arcs), dose grid 2.5mm
* MapCHECK2 (measured 2D dose distribution V.S. TPS calculated dose)



手机屏幕截图

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**We aim to use RTPlan DICOM to estimate the gantry speed, MLC speed, acceleration and dose rate during the delivery. But the difference between PLAN DICOM and TRF indicates the estimate for MLC speed, gantry speed is far away from the reality.**

1. **Check the consistency of differential MU between TPS and TDS**

截图里有图片

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1. **Check time interval between control points (estimated from DICOM VS. Delivery).**

**手机屏幕截图

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1. **Check average gantry speed between control points (estimated from time interval). Though gantry speed exists negative, the dose rate is 0 in this gantry position. So it won’t influence the final delivery dose.**

**图片包含 游戏机, 文字

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**图片包含 游戏机

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1. **Check average dose rate between control points (estimated from time interval)**

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1. **Check MLC speed between 2 control points (from TRF e.g. CP3-> CP4)**

**图片包含 游戏机, 截图

描述已自动生成**

**图片包含 游戏机, 截图

描述已自动生成**

**截图里有图片

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**Reference**

**[1]** Park, J. M., Park, S. Y., Kim, H., Kim, J. H., Carlson, J., & Ye, S. J. (2014). Modulation indices for volumetric modulated arc therapy. *Physics in Medicine & Biology*, *59*(23), 7315.