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P3.032 Research on establishment methods of basic survey control network for HL-2M tokamak

Wednesday, 19 September 2018 11:00 (2 hours)

Due to the high precision requirements of HL-2M tokamak sub-components assembly, the survey control network with high precision should be established. With high accuracy distance measurement of laser tracker system and distance intersection method, the local coordinates of reference points(or the relative locations of the reference points) in the survey control network are calculated. There are several steps in the simulation: 1) the ideal coordinate of reference points and laser tracker stations generation in the ideal global coordinate system. 2) the ideal distance calculation between reference points and stations and an error of distance measurement with a normal distribution added(sigma=2.5 and 5 micron). 3) the local coordinate(in the stations) calculation with distance intersection method and coordinate transformation from the local coordinate to the ideal. 4) the performance evaluation(delta: root-mean-square error of distance between the calculation and the ideal in the global coordinate system). The evaluation shows that delta is about 15-25 micron with sigma=5 micron and will be less than 10 micron with sigma=2.5 micron.

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