Analyzing the effect of equal-angle spatial discretization on Sound event localization and detection

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- Detecting spatial, temporal and class information of sound events

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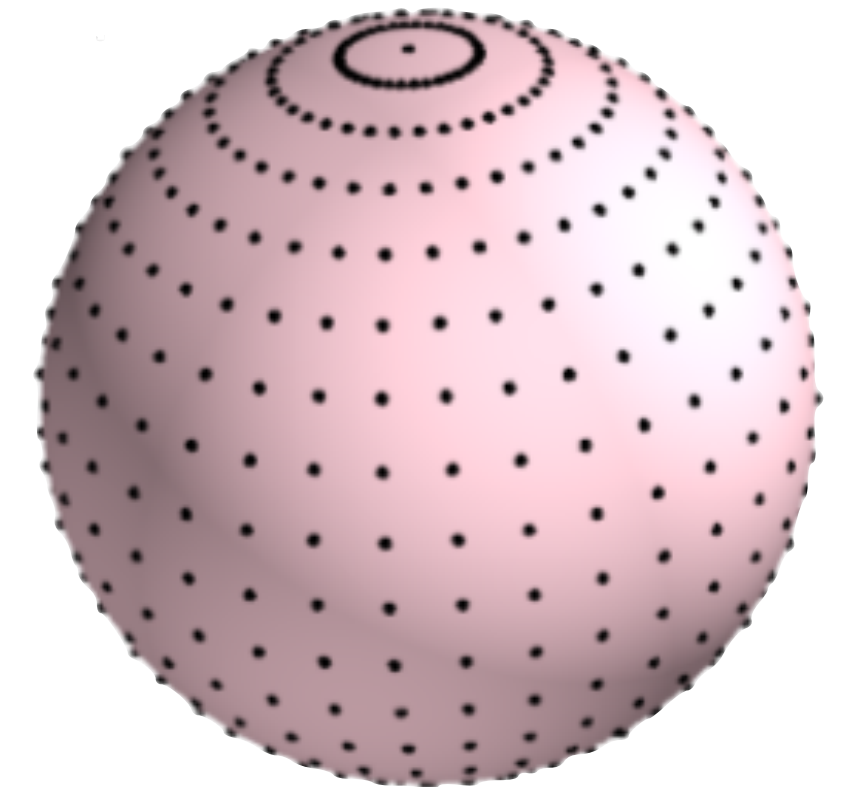
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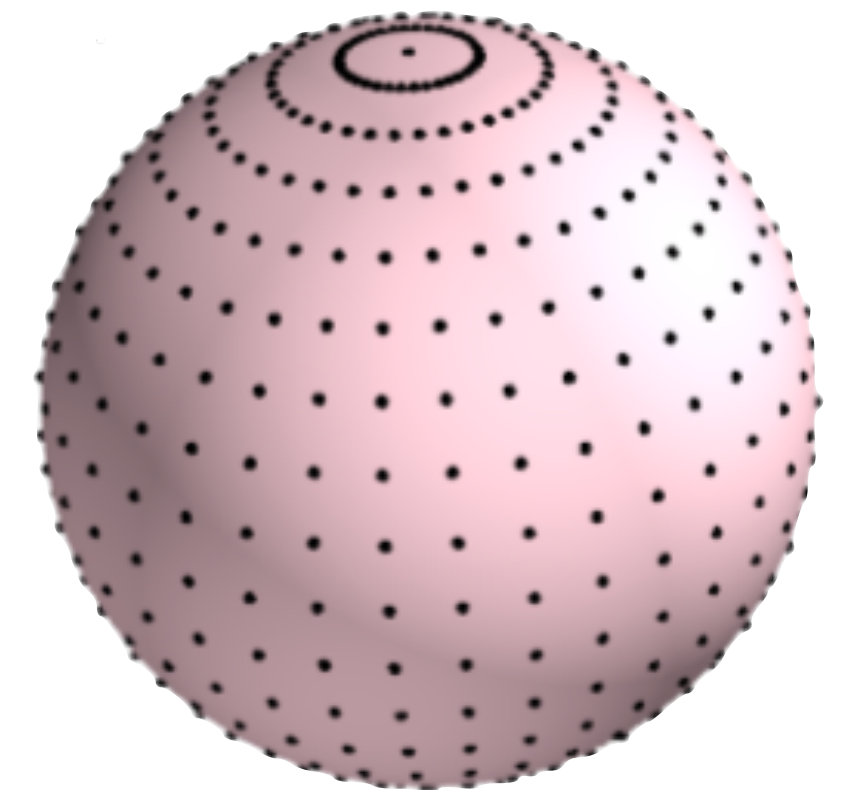# Sound event localization and detection(SELD)

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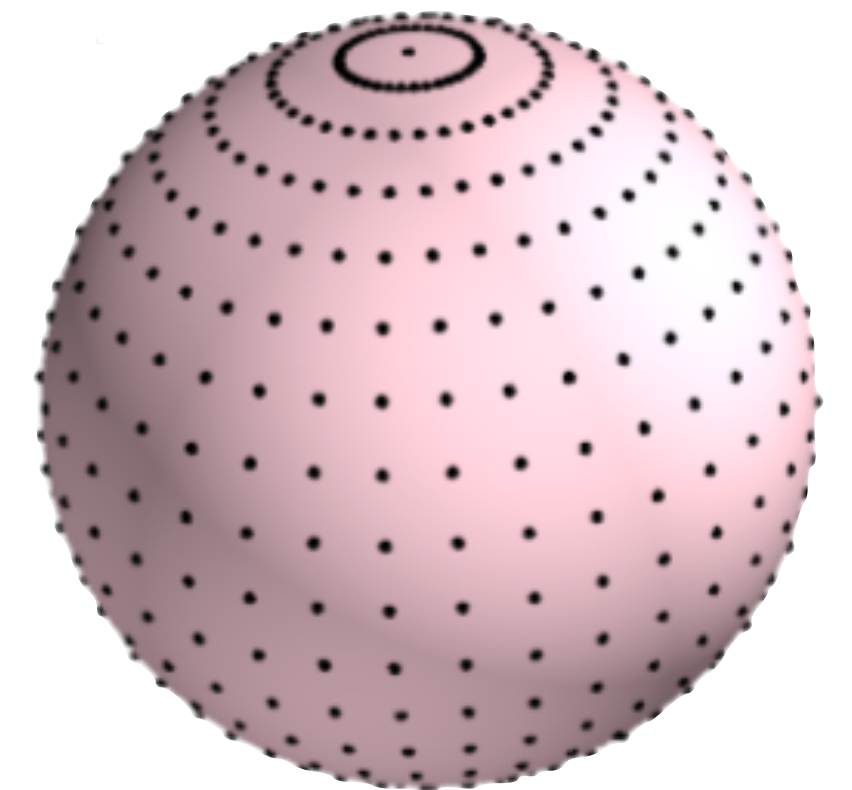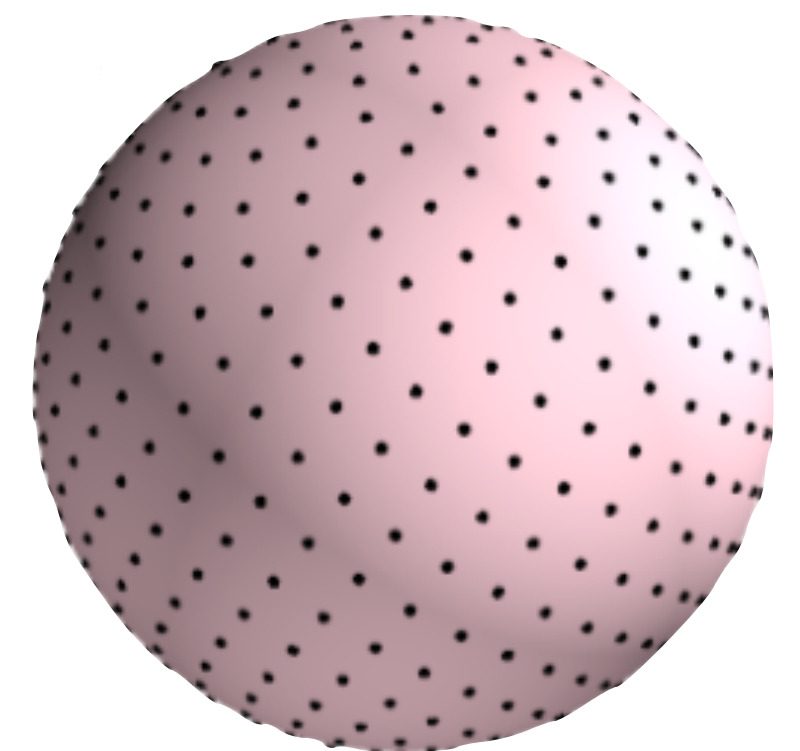**Spatial discretization of sound event targets**

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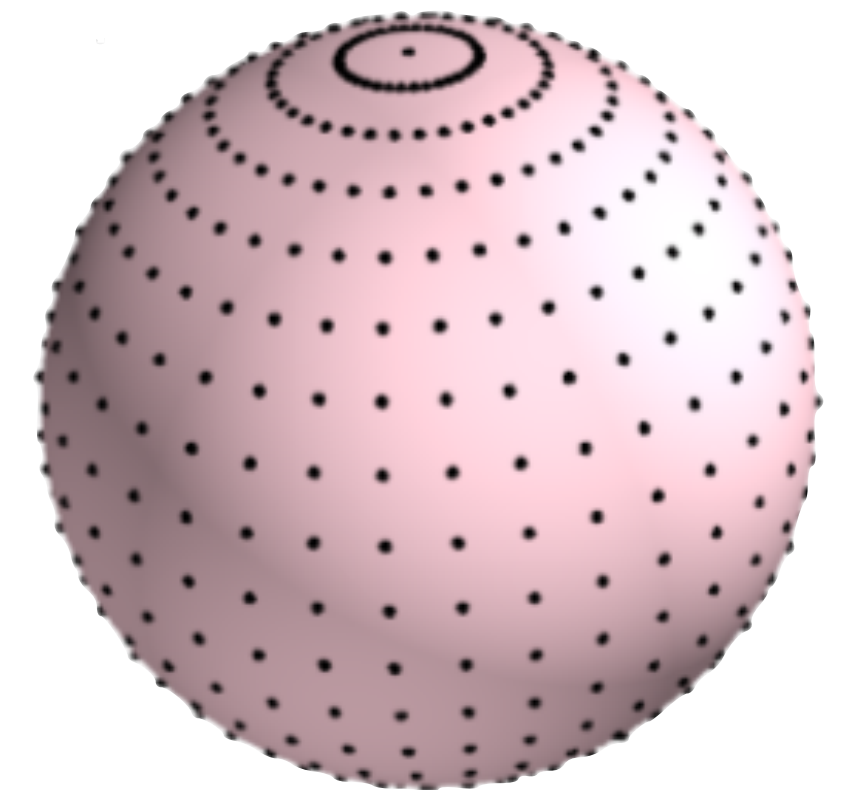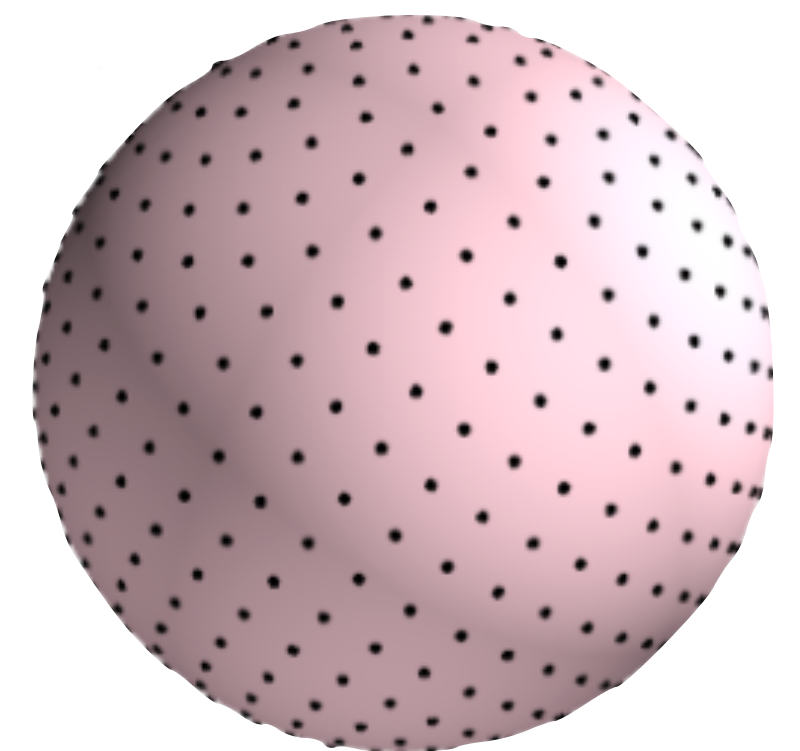**Spatial discretization of sound event targets**
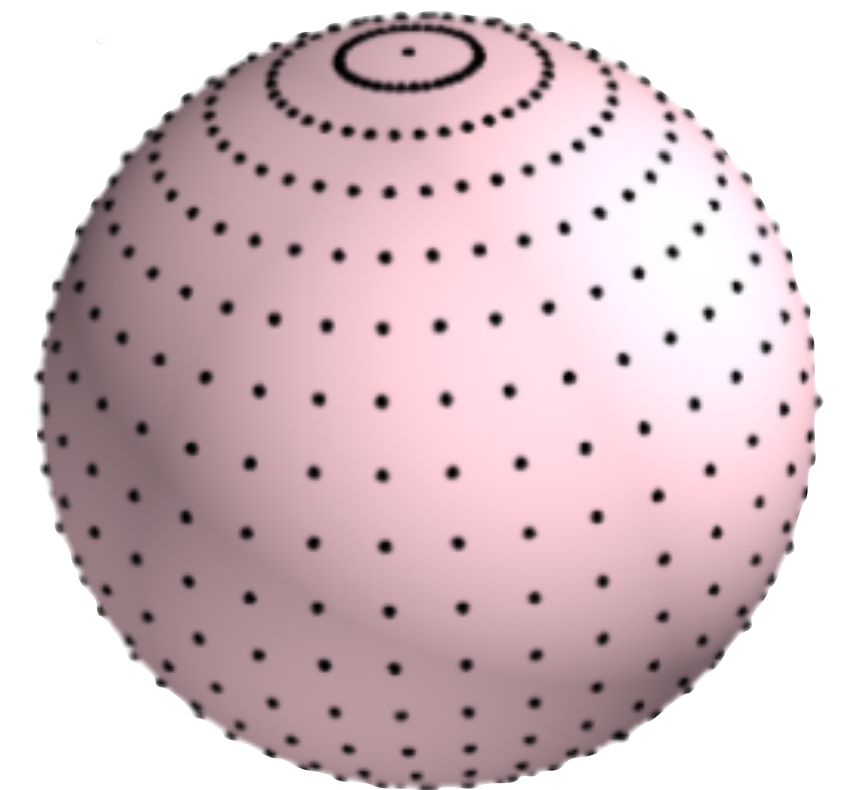

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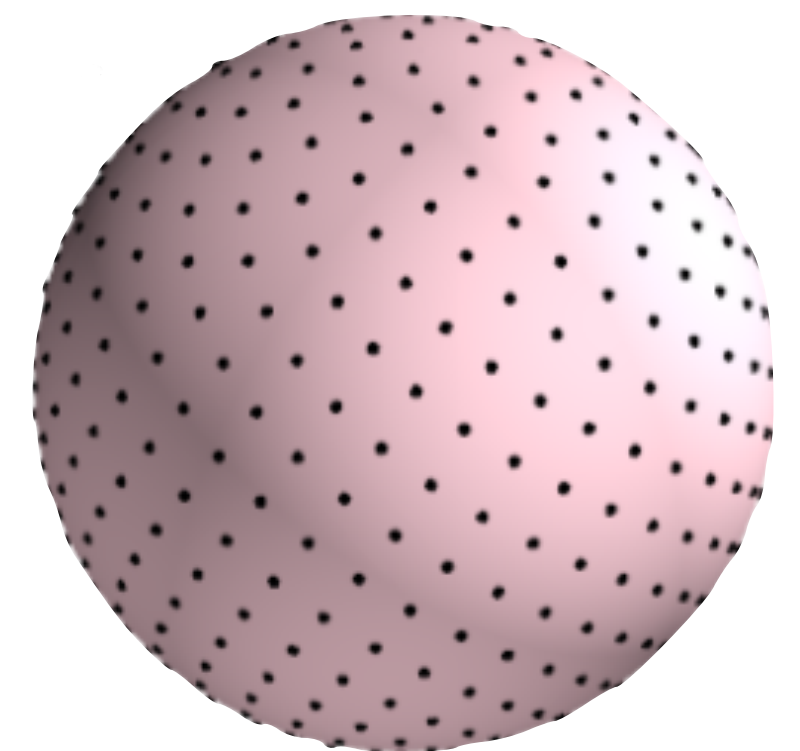**Spatial discretization of sound event targets**

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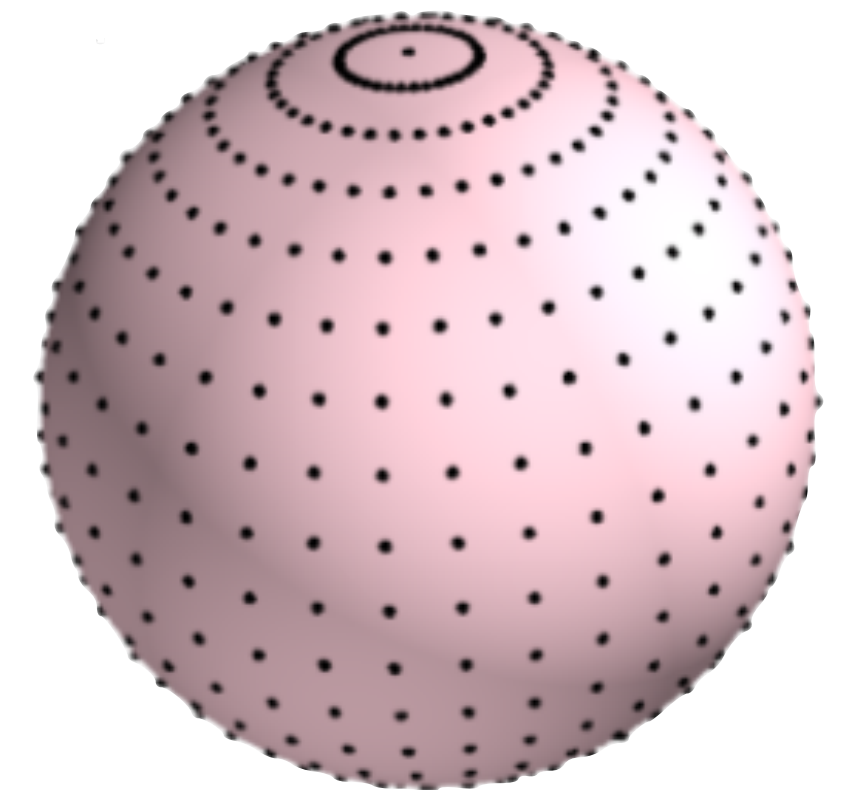Spatial discretization
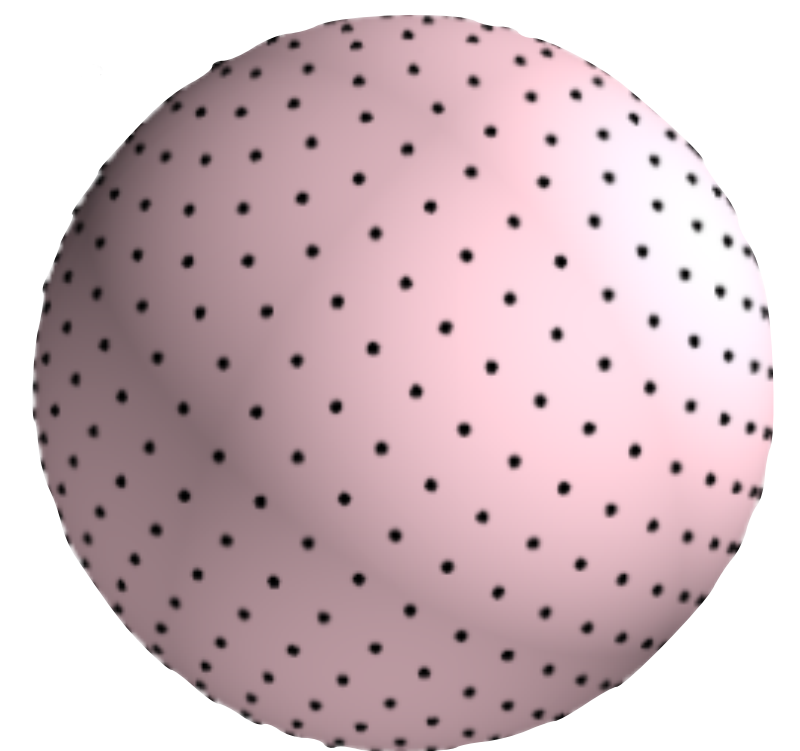of sound event targets

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Question: Does equal-angle discretization affect model localization performance along the elevation axis?

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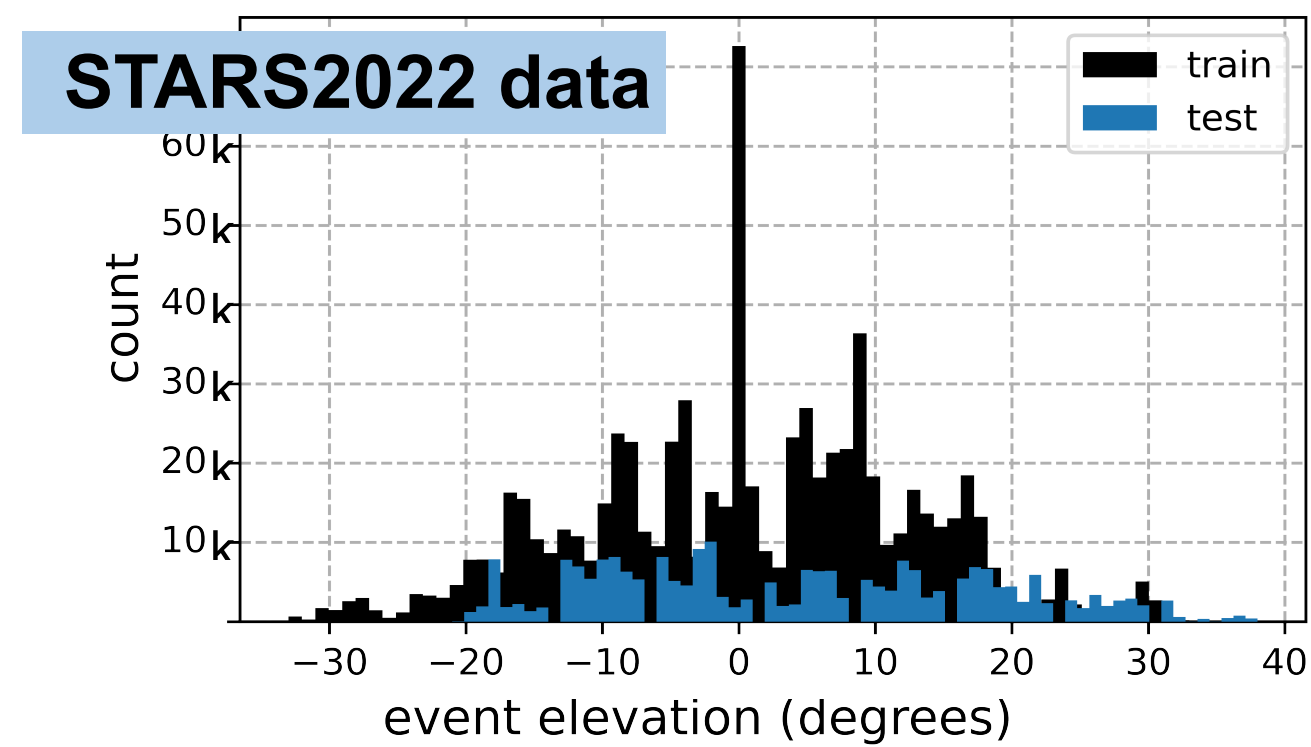

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Equal-angle vs uniform targets

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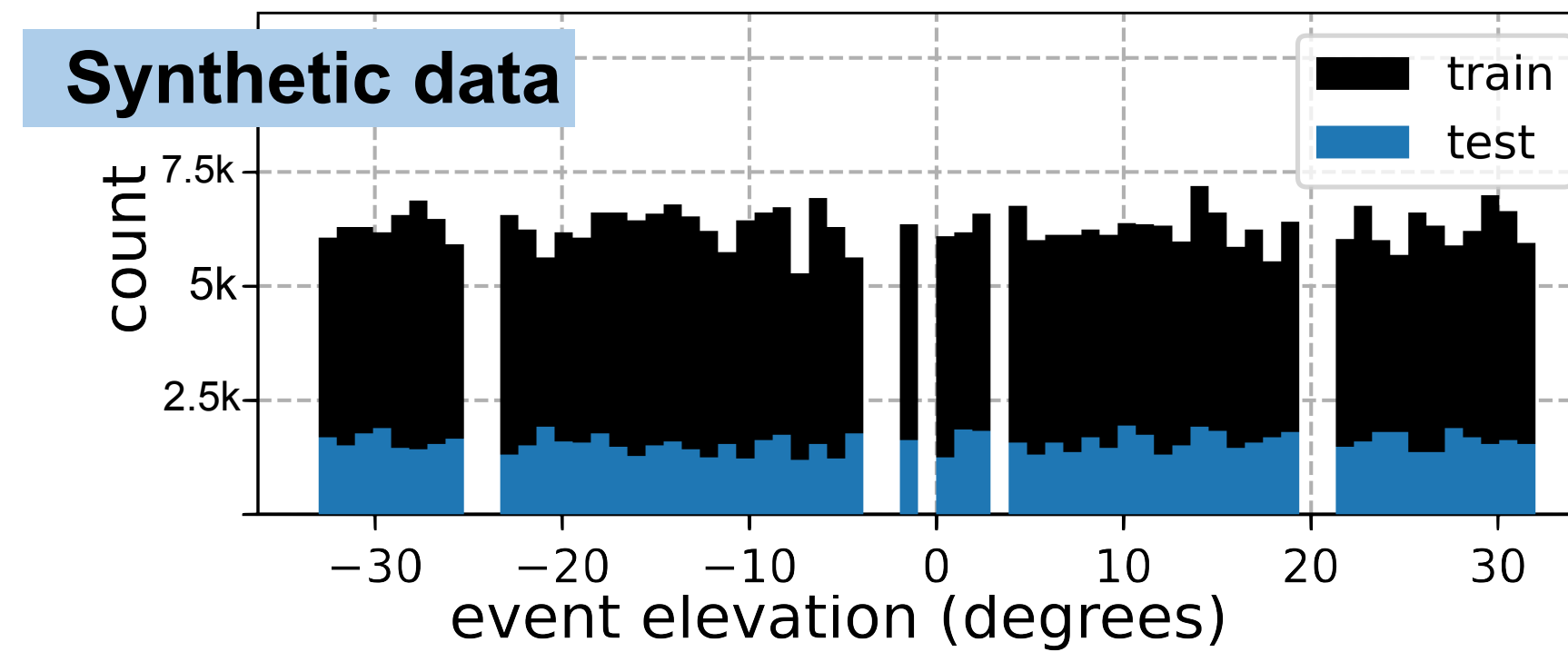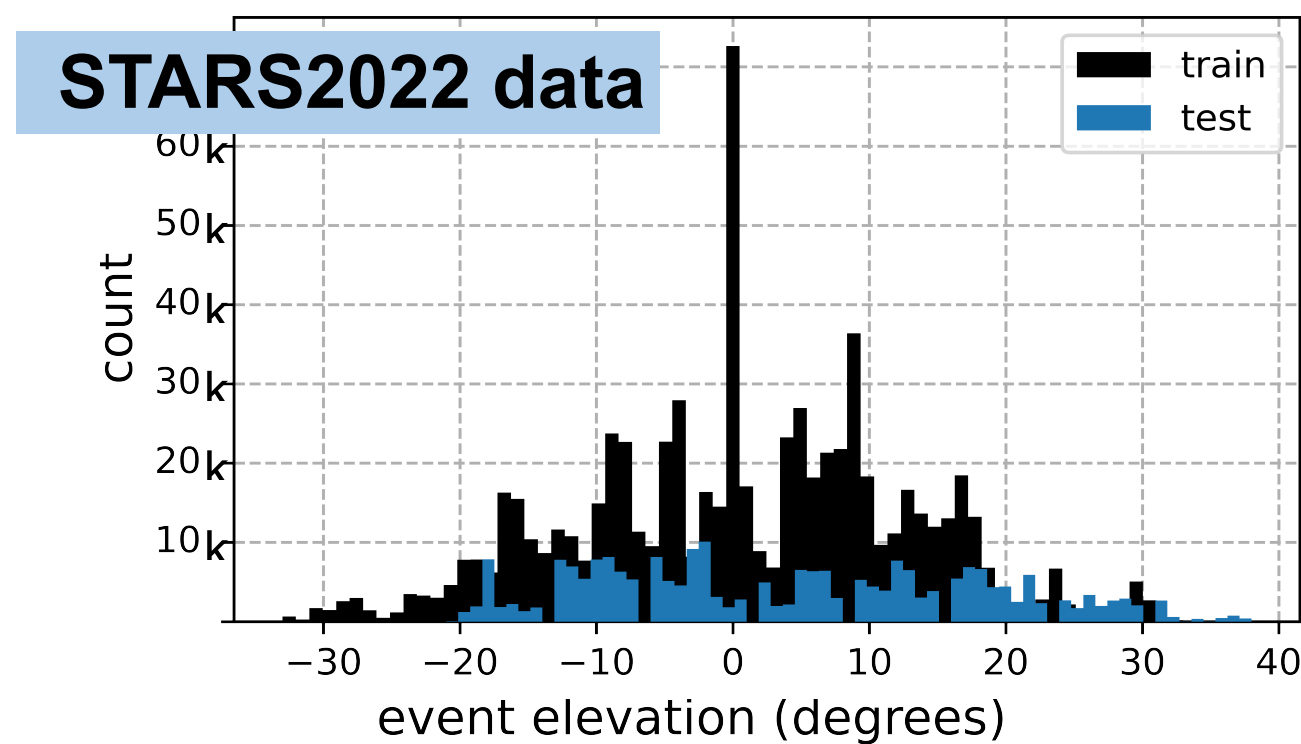
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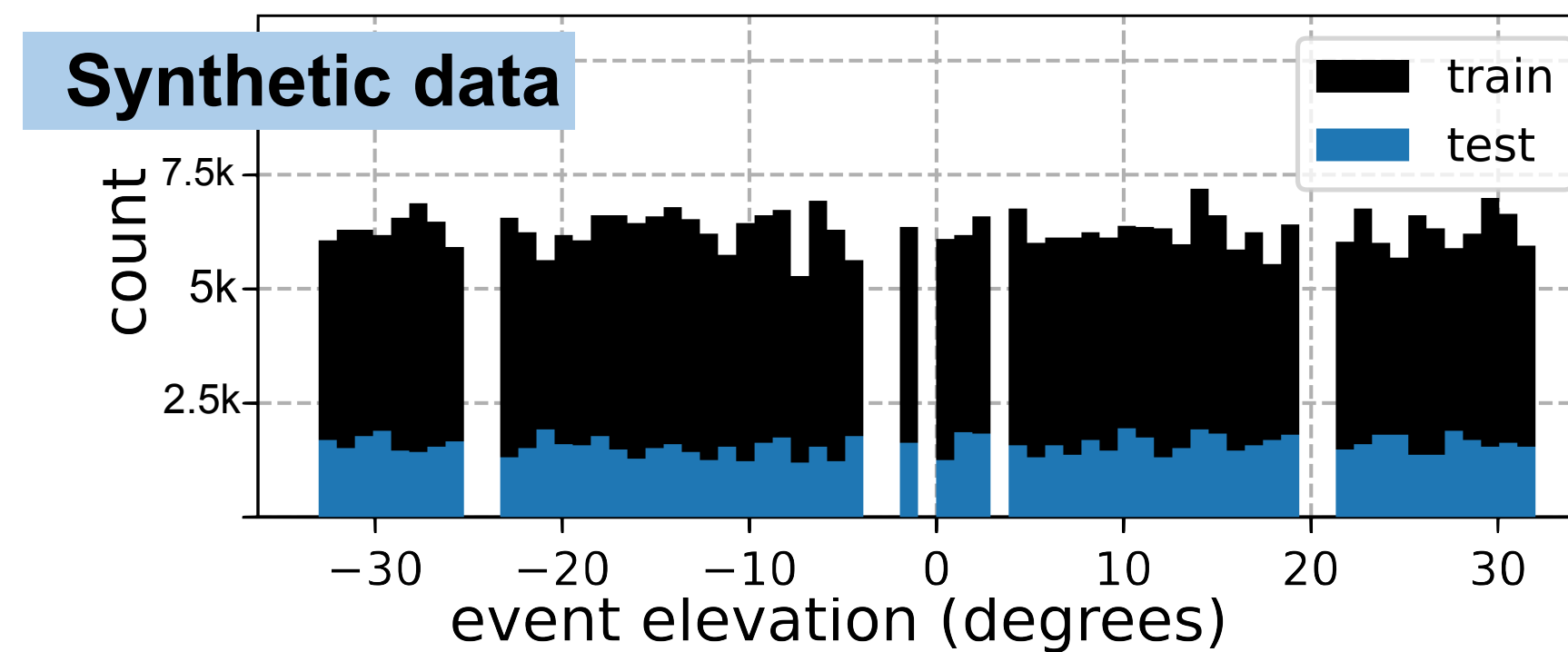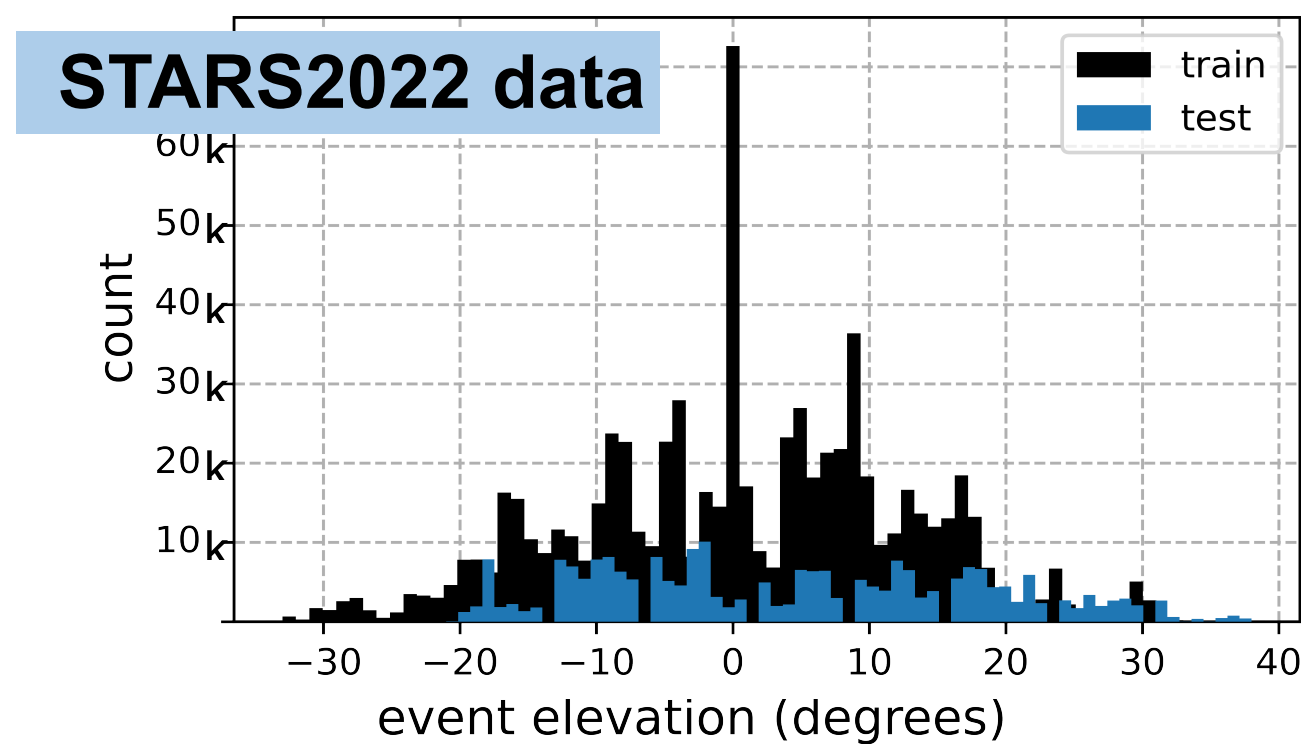 - STARSS22: more events at equator

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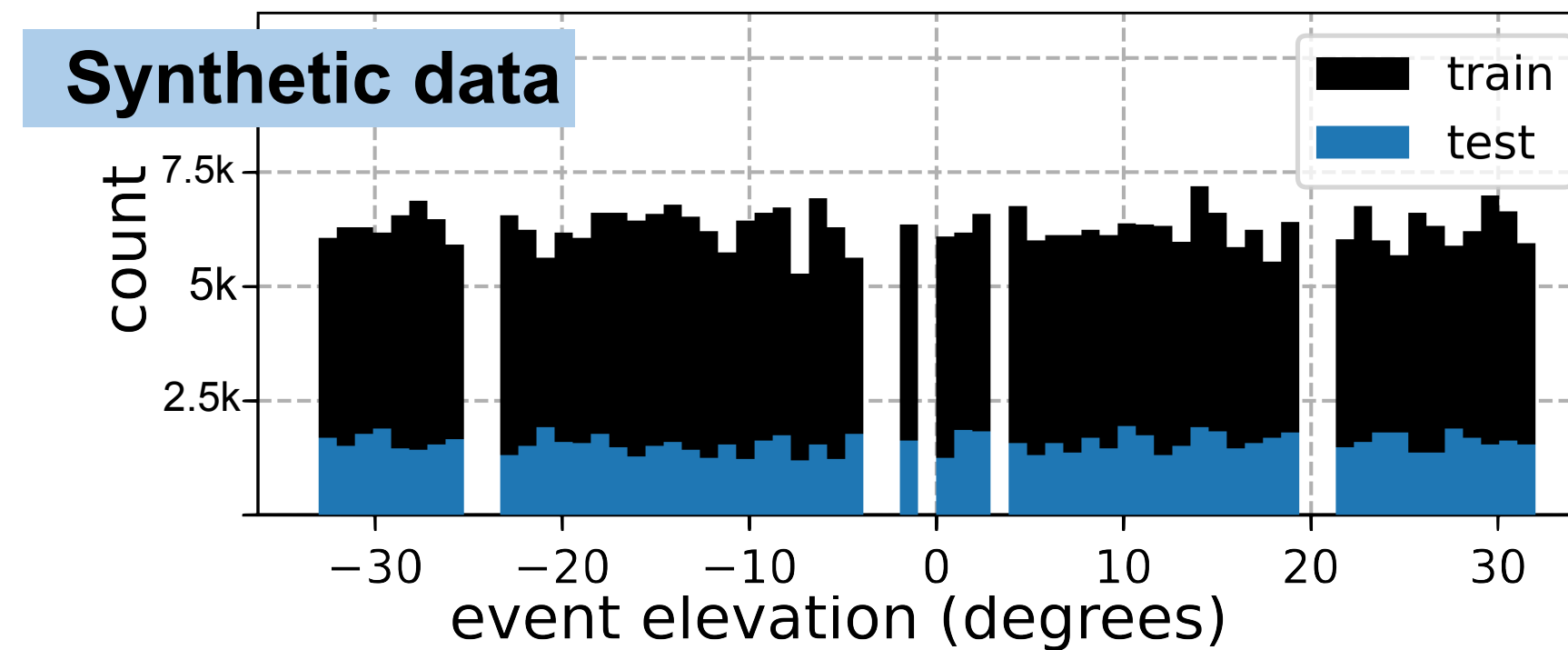
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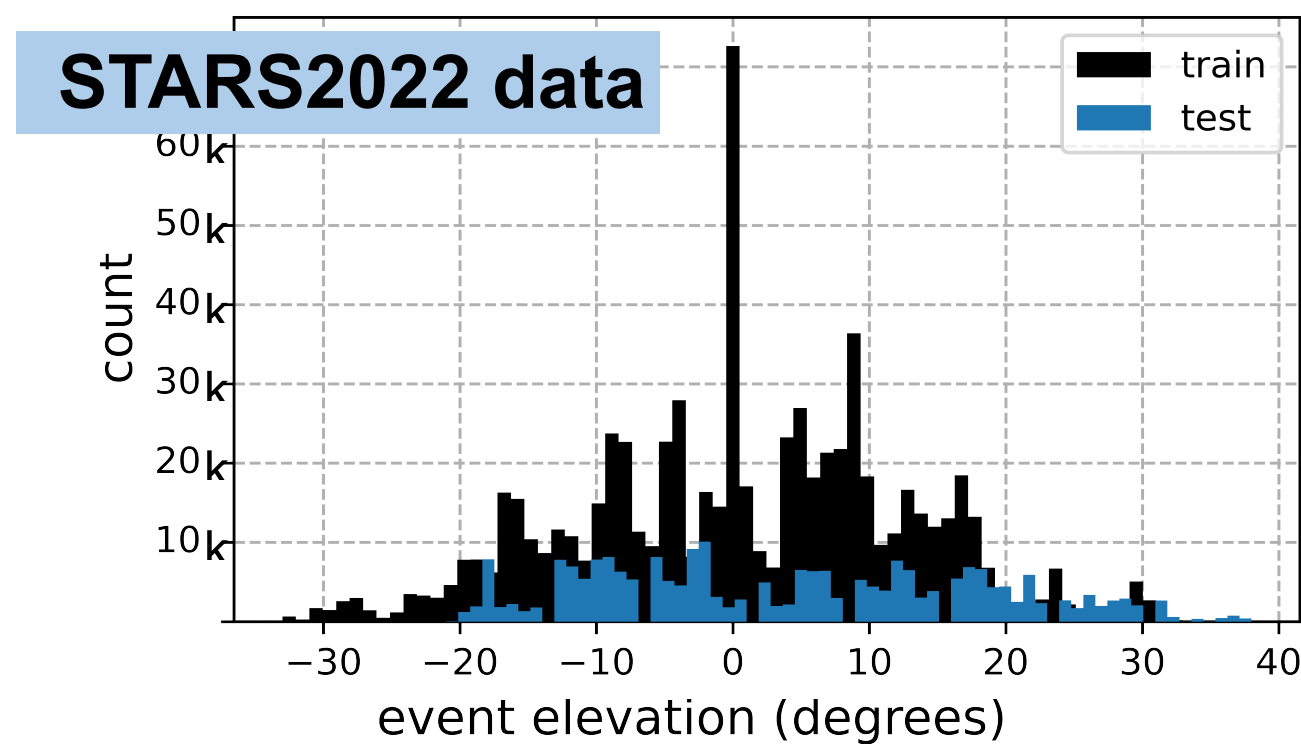
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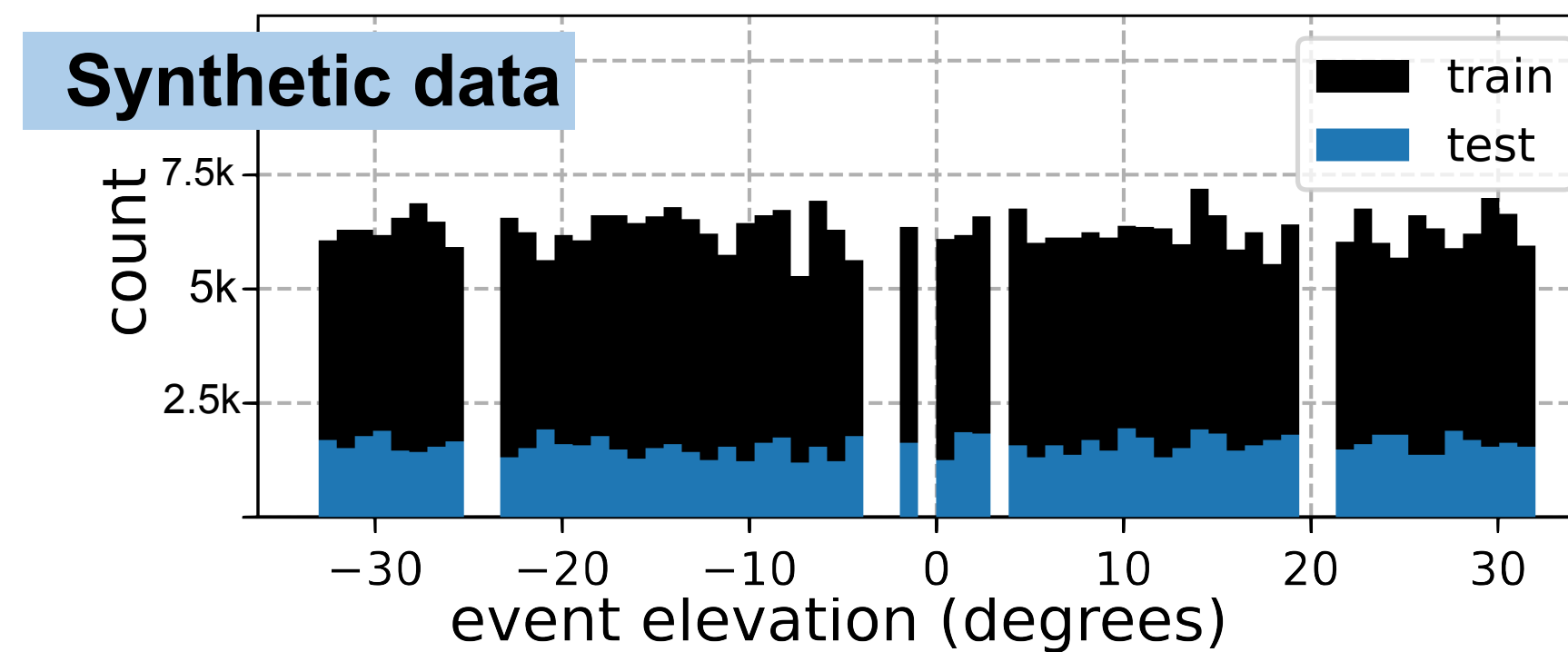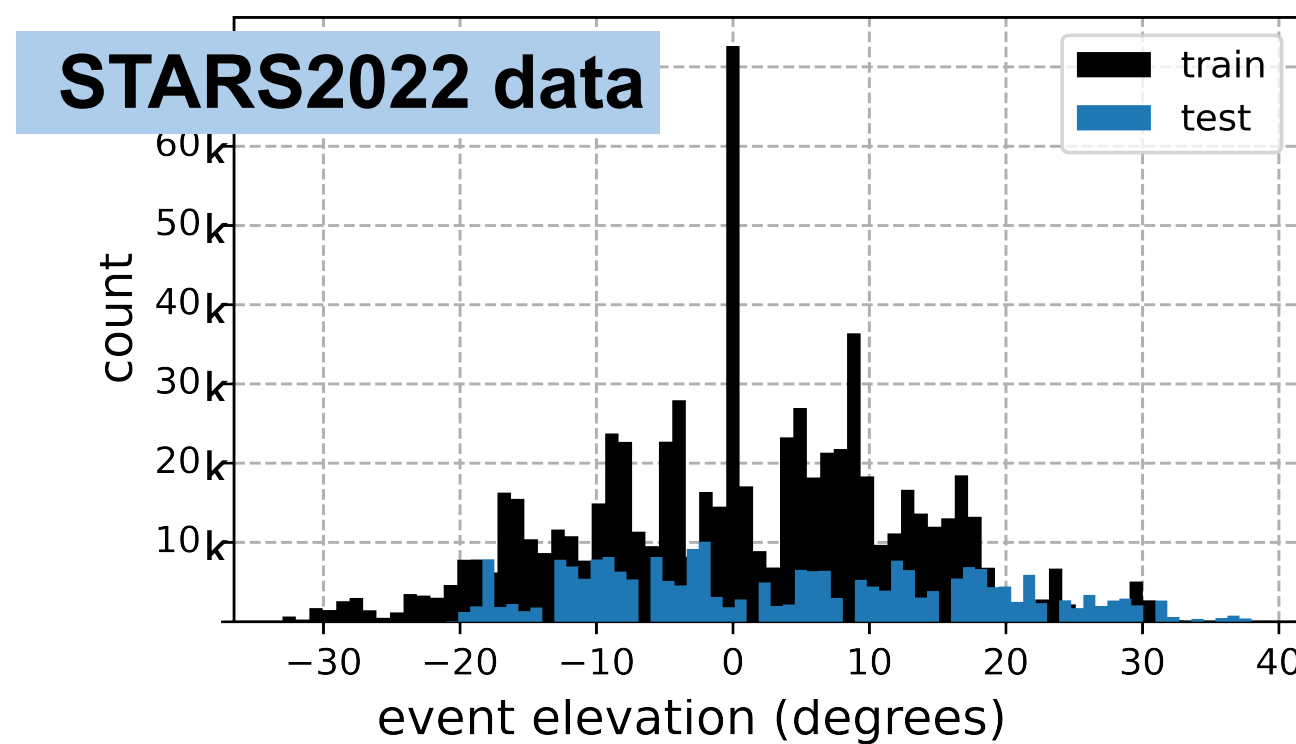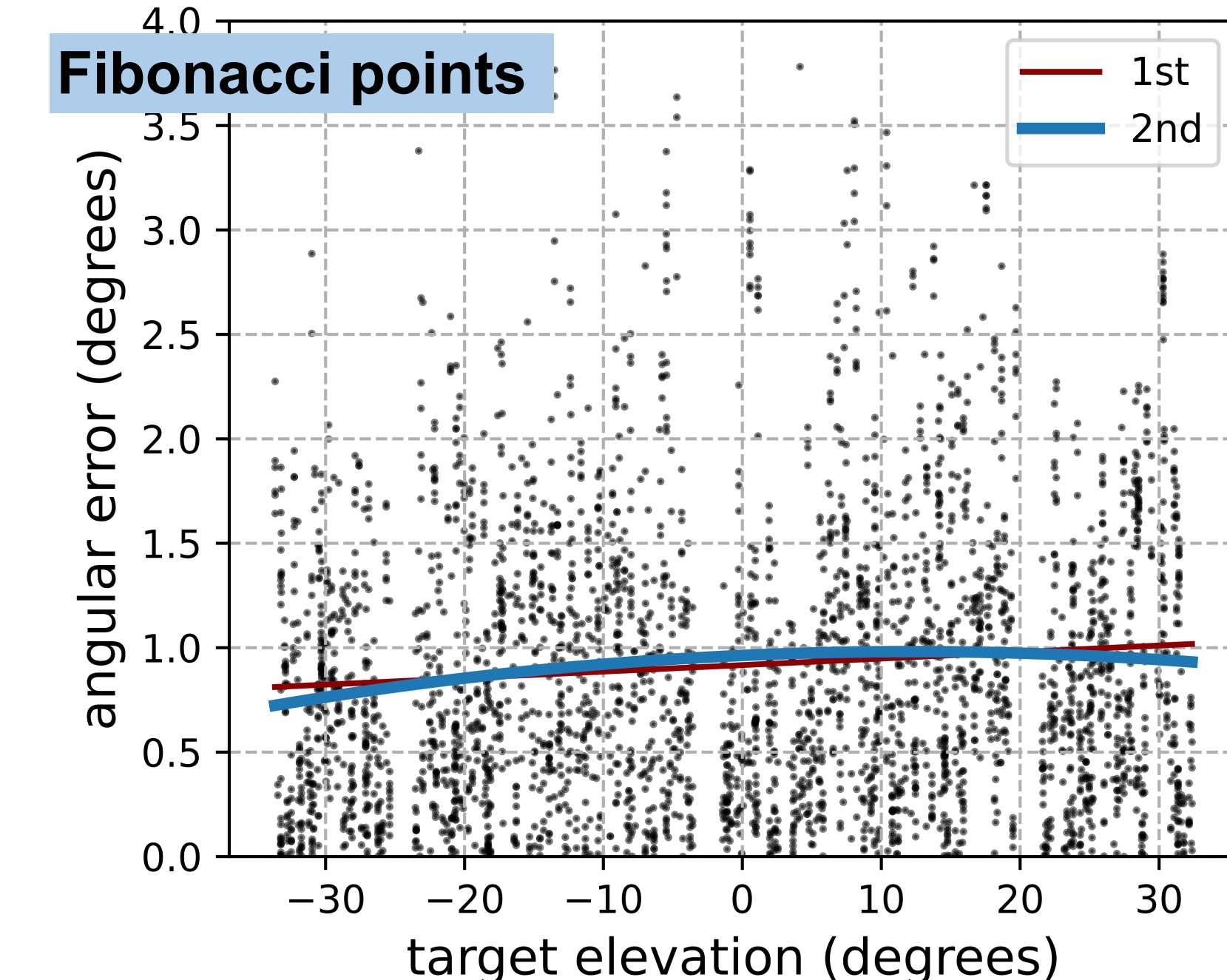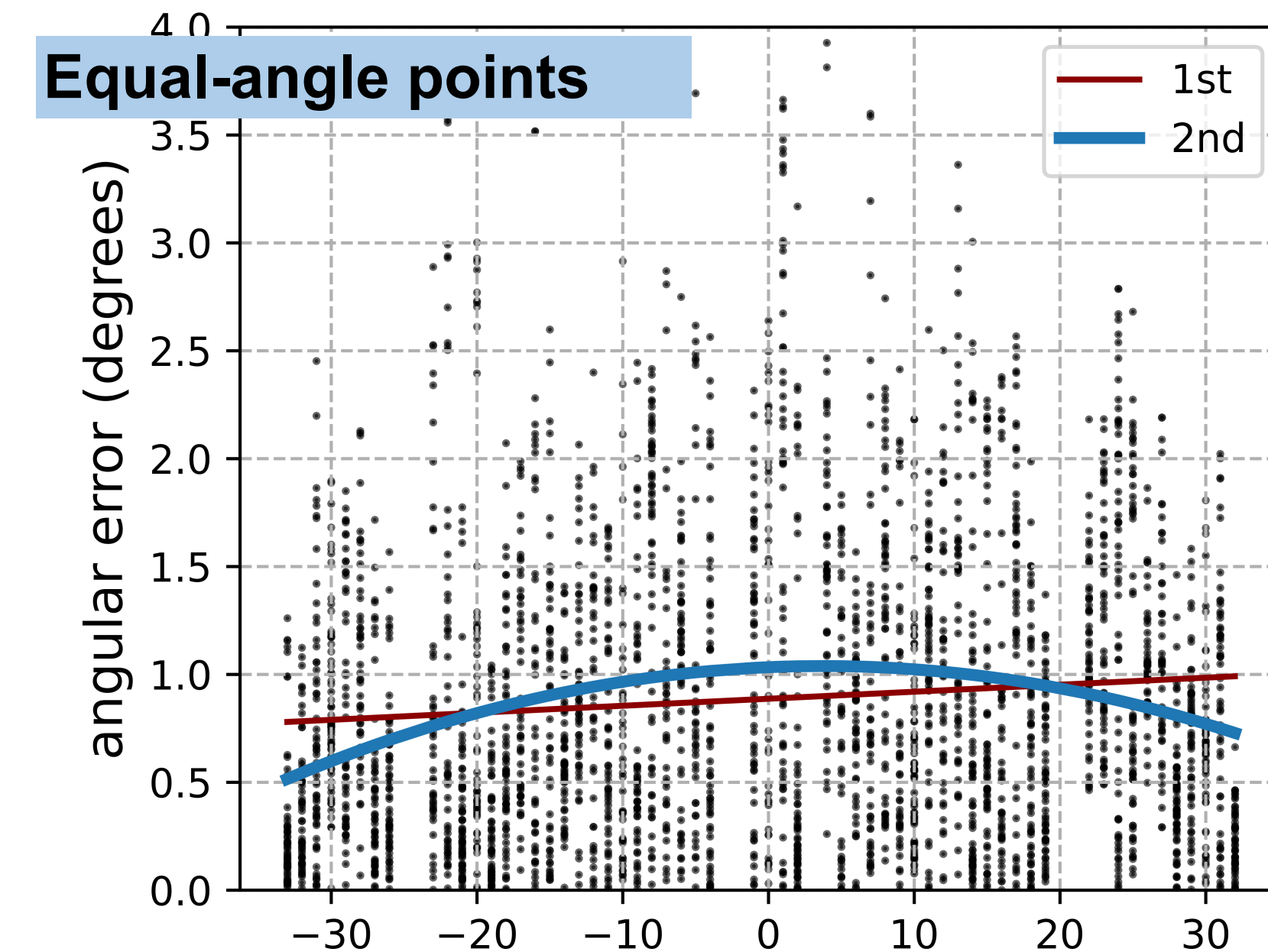 - Fibonacci targets

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STARS2022 data

Synthetic data

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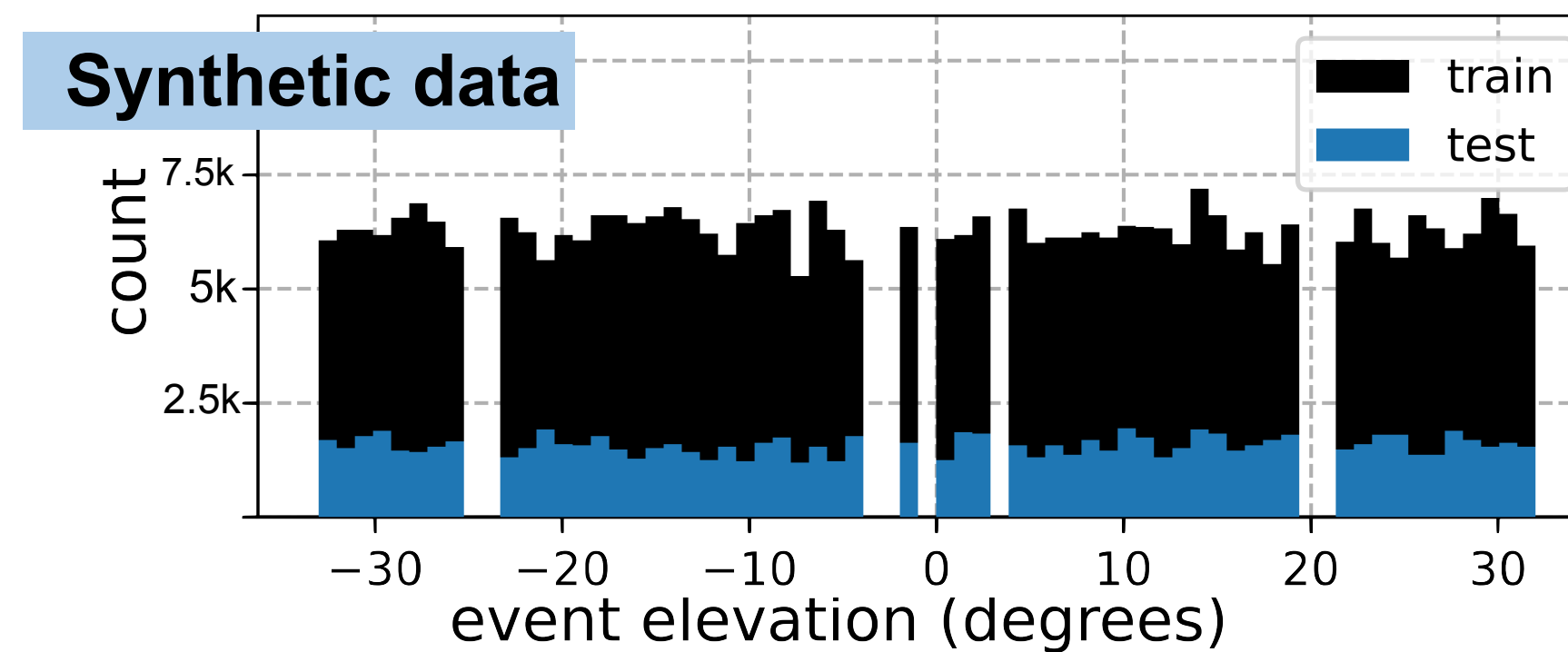

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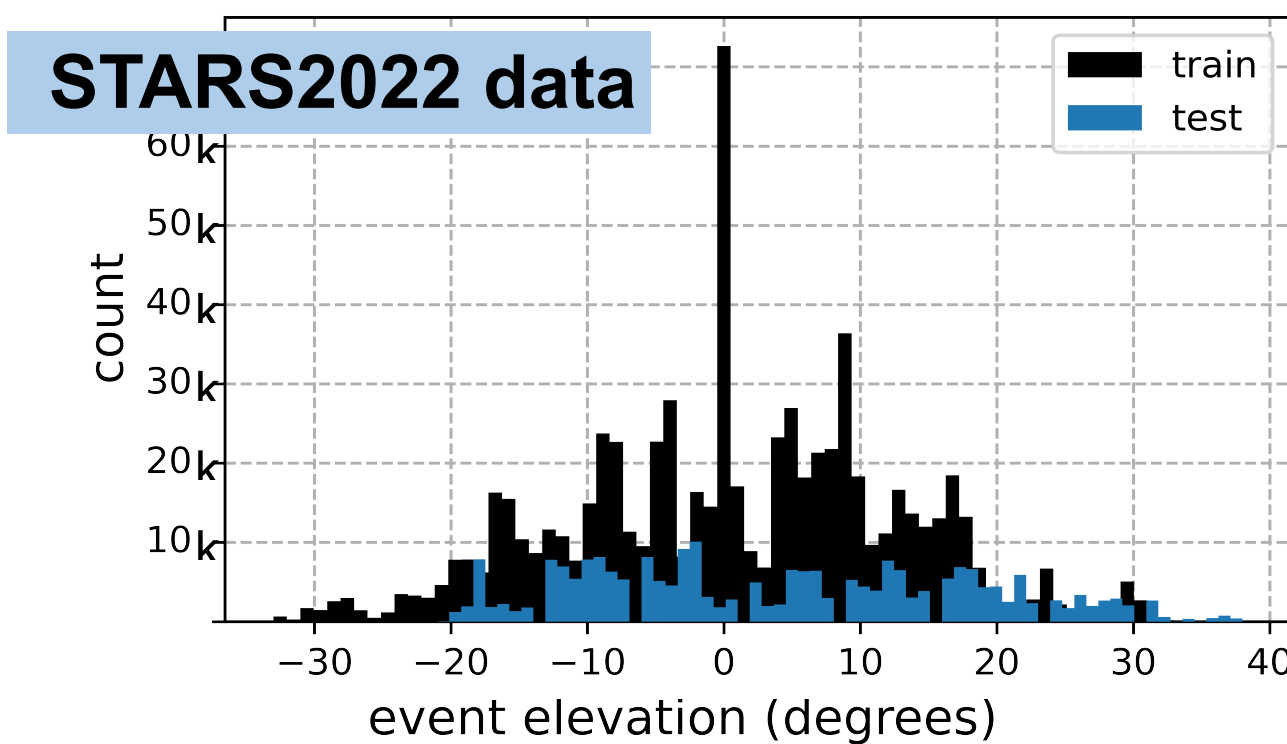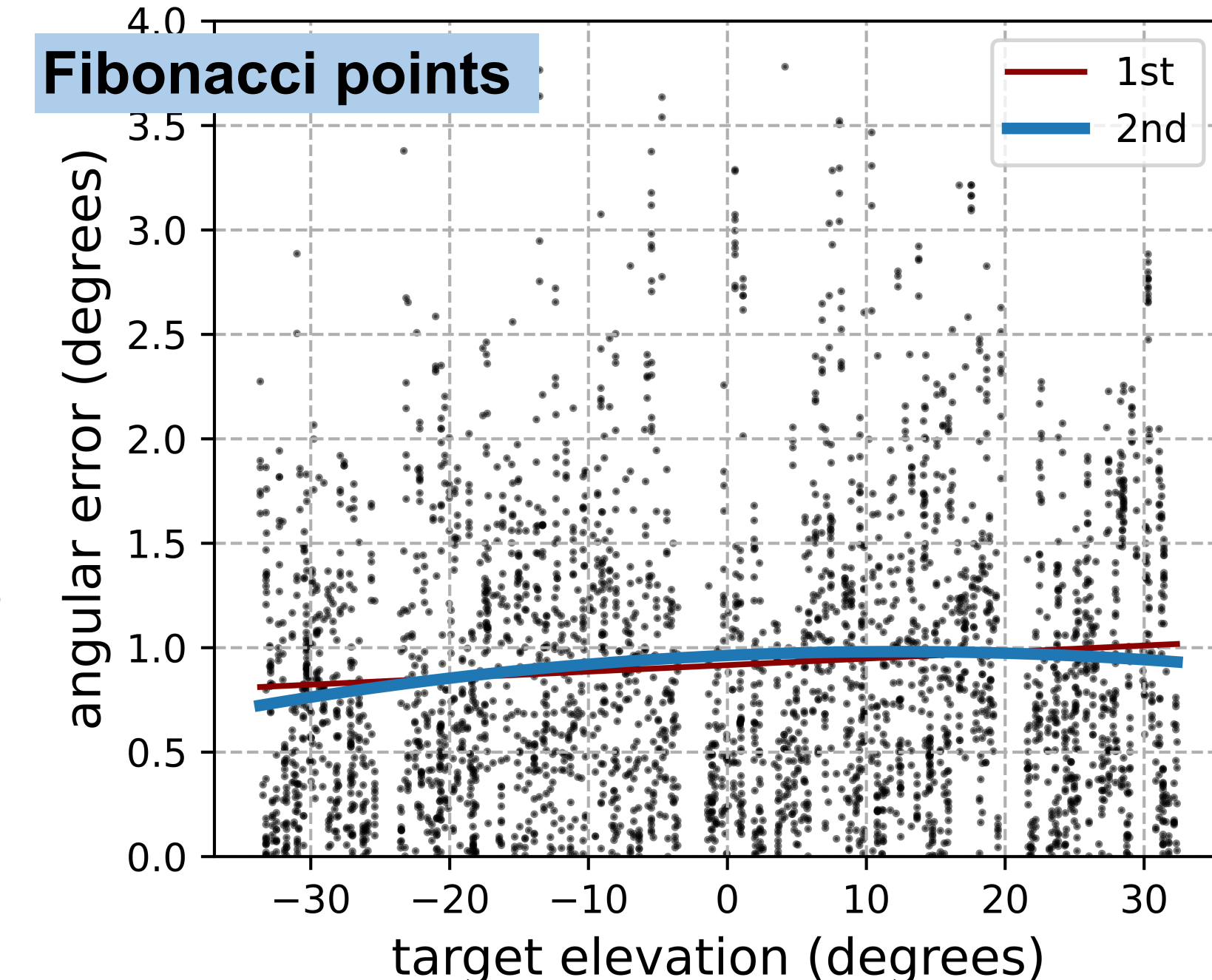 - **Our Synthetic data**: uniform along elevation axis

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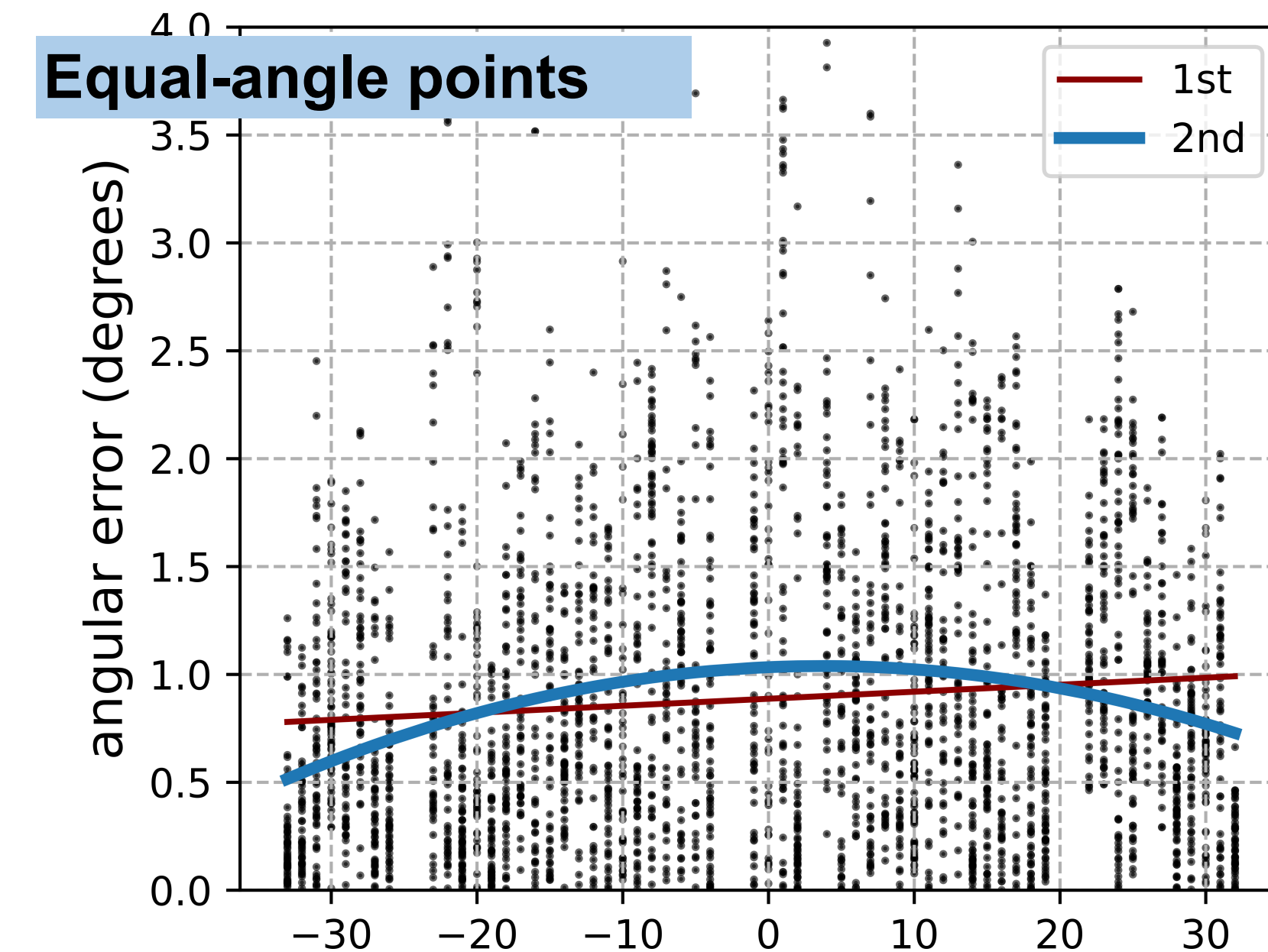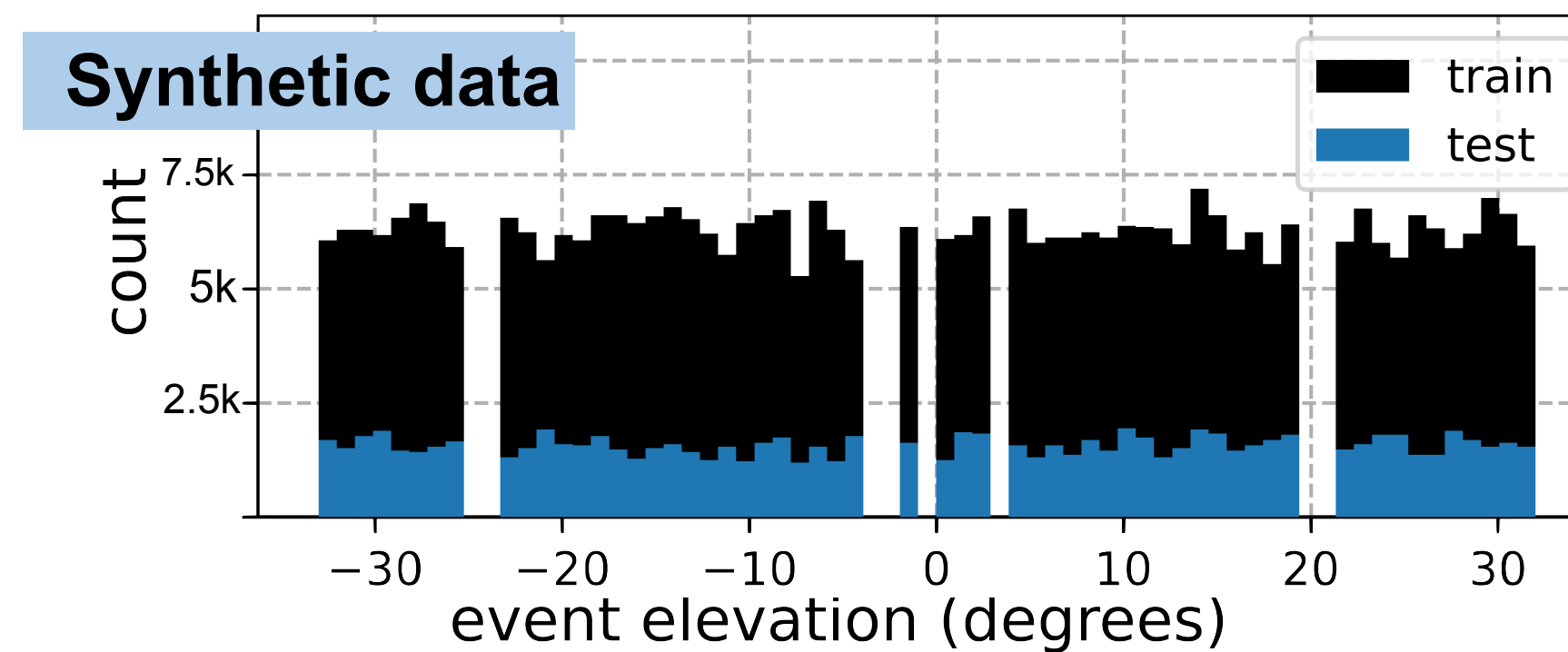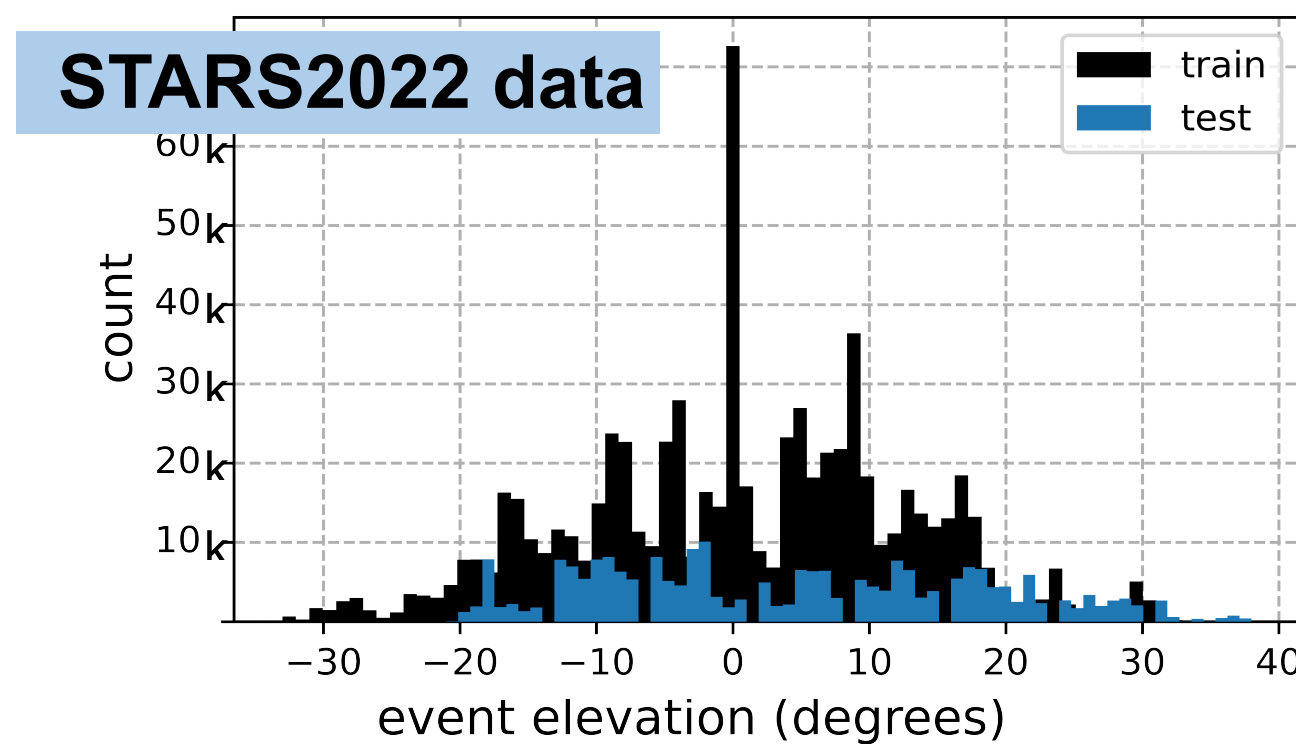 - Equal-angle targets
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Next: Is resampling targets the only way to mitigate bias?

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Thresholded Angular error ADPIT(TAEADPIT) loss

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- Penalizes angular LE across azimuth and elevation

Components of TAEADPIT loss

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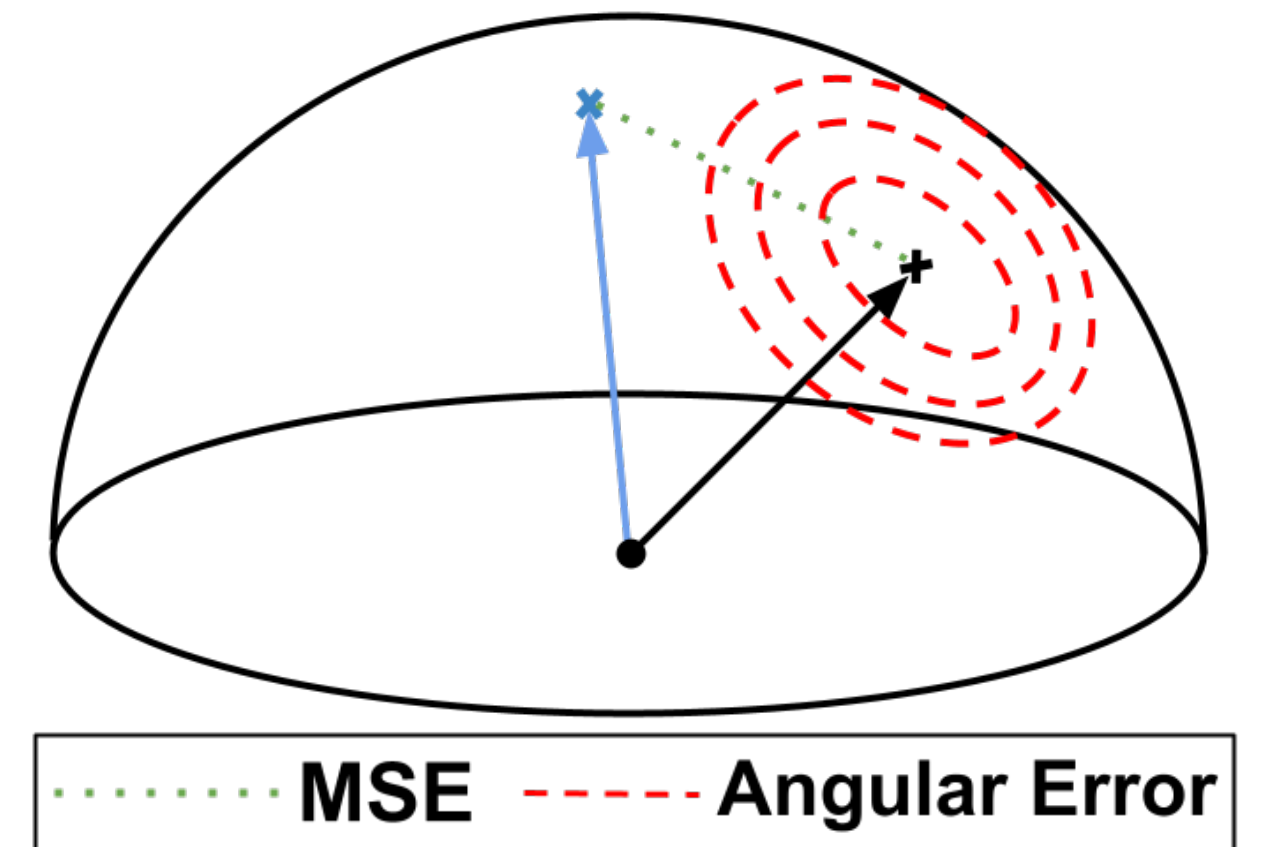**Equal-angle points after TAEADPIT fine-tuning**

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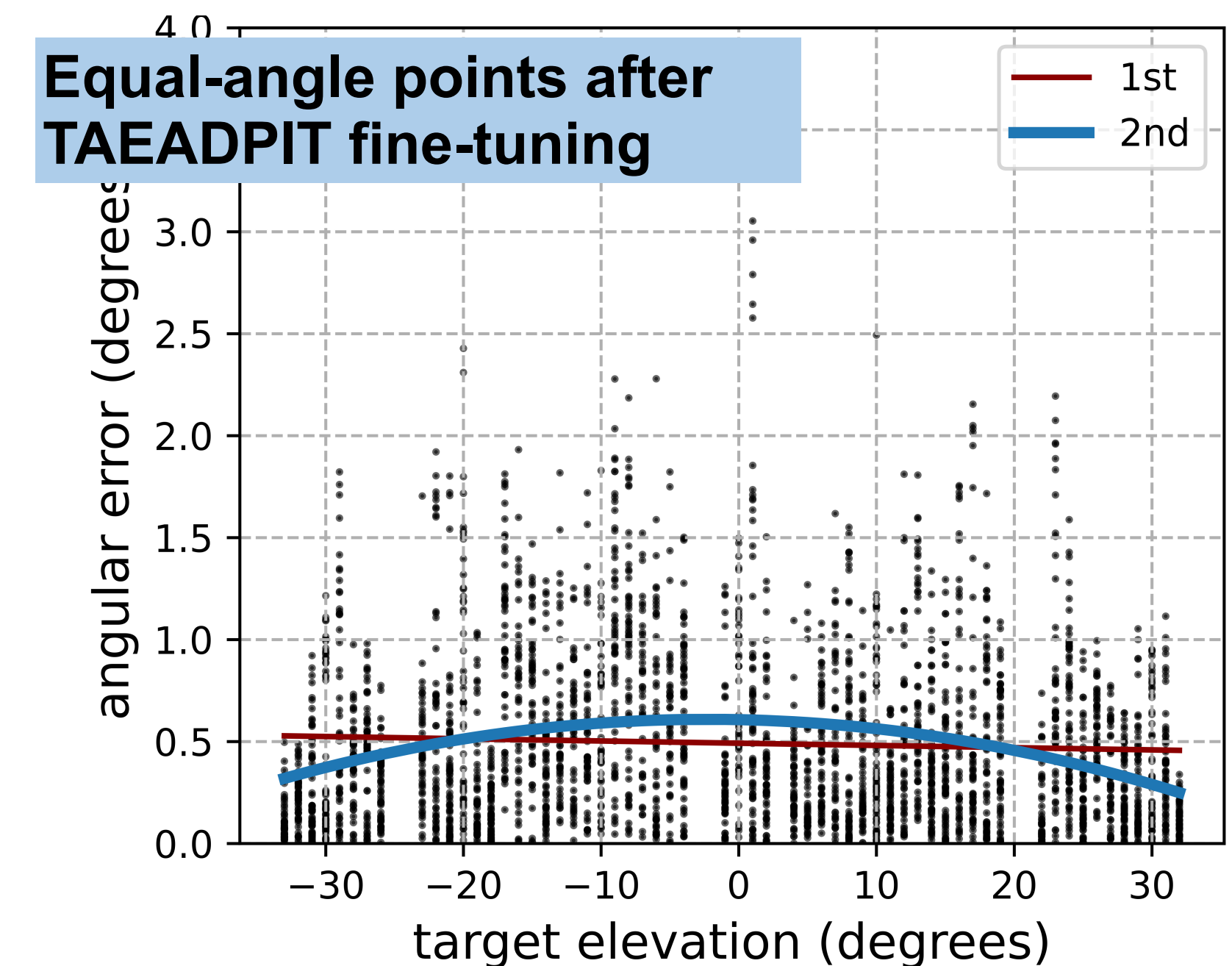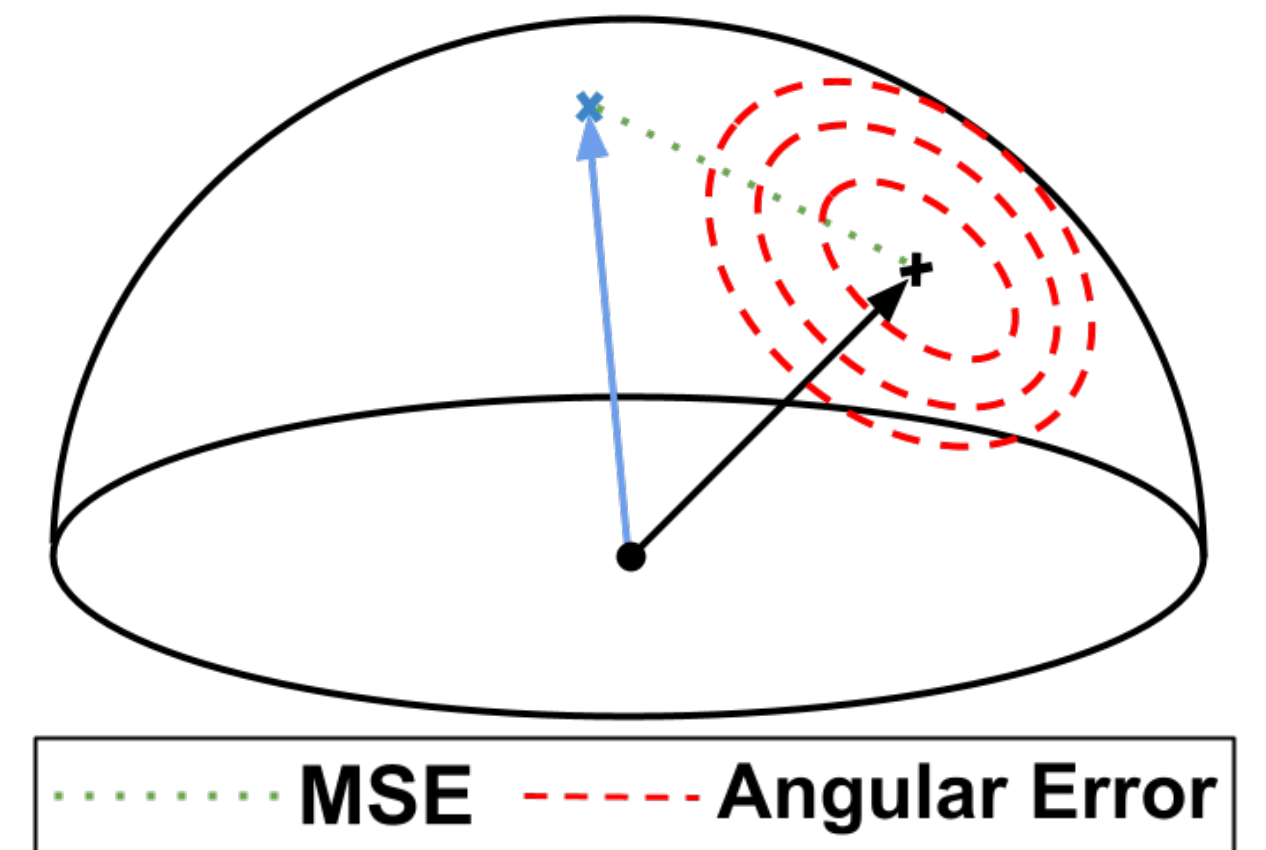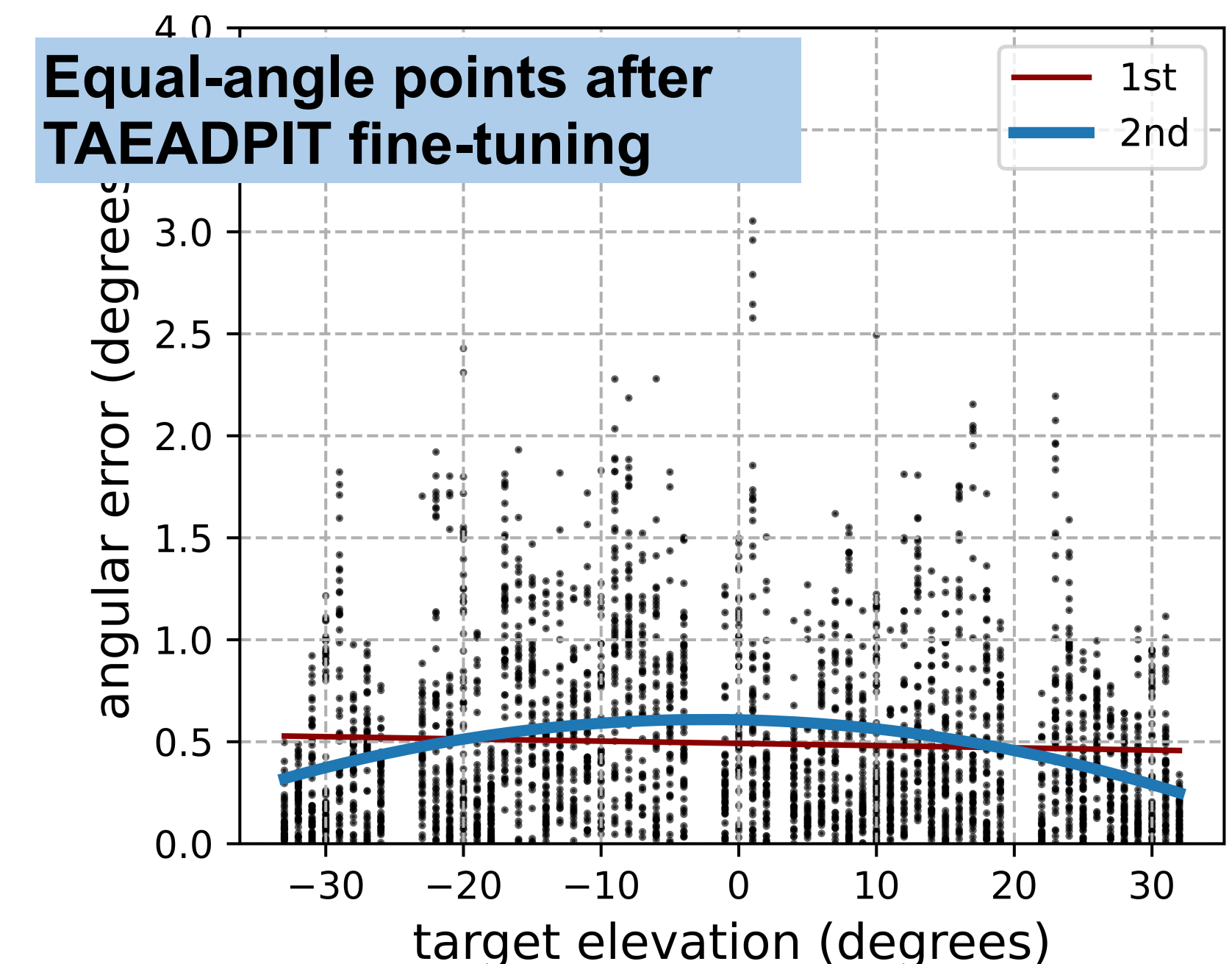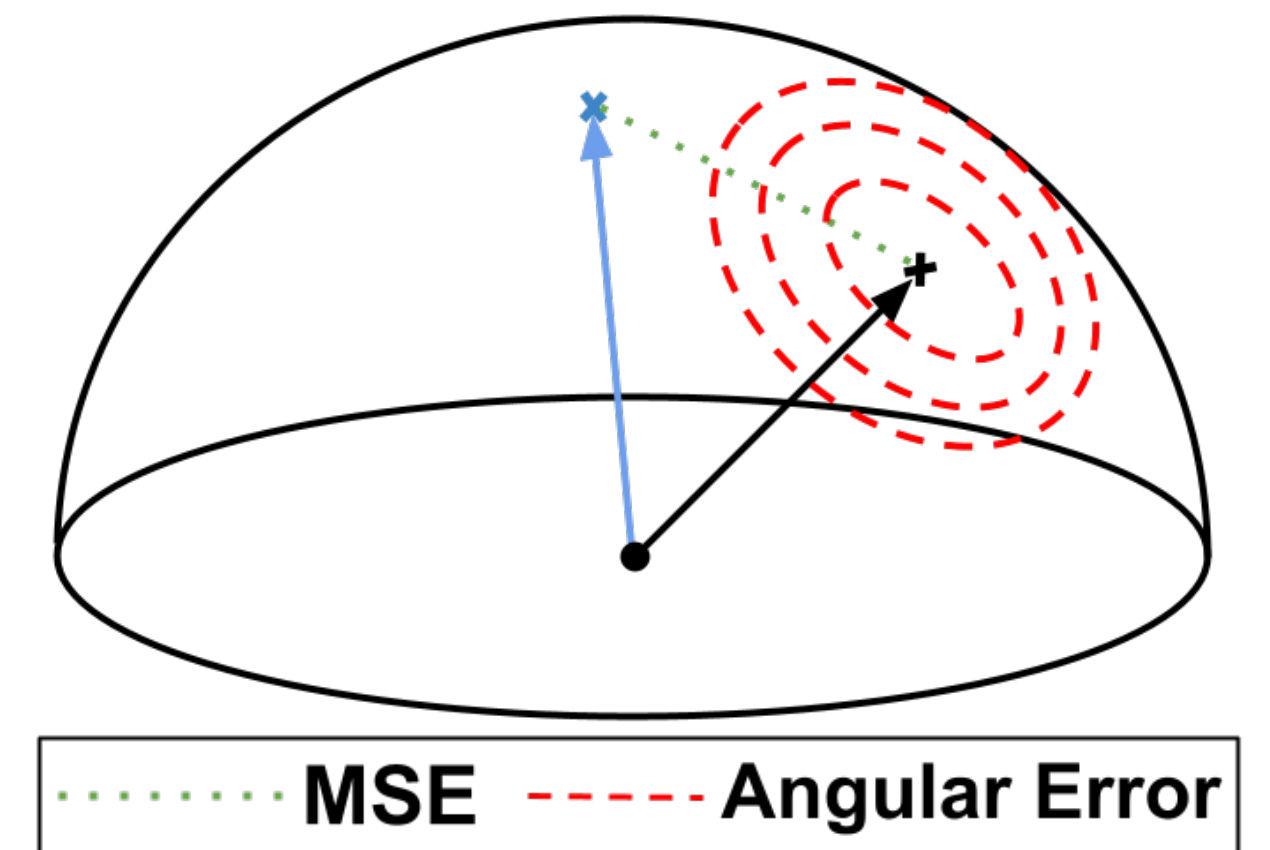
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Loss	ER_{20^o}	F_{20^o}	LE_{CD}	LR_{CD}	SELD
ADPIT-base	0.69	0.24	30.43	0.43	0.55
TAEDPIT-tune	0.71	0.23	28.86	0.47	0.54
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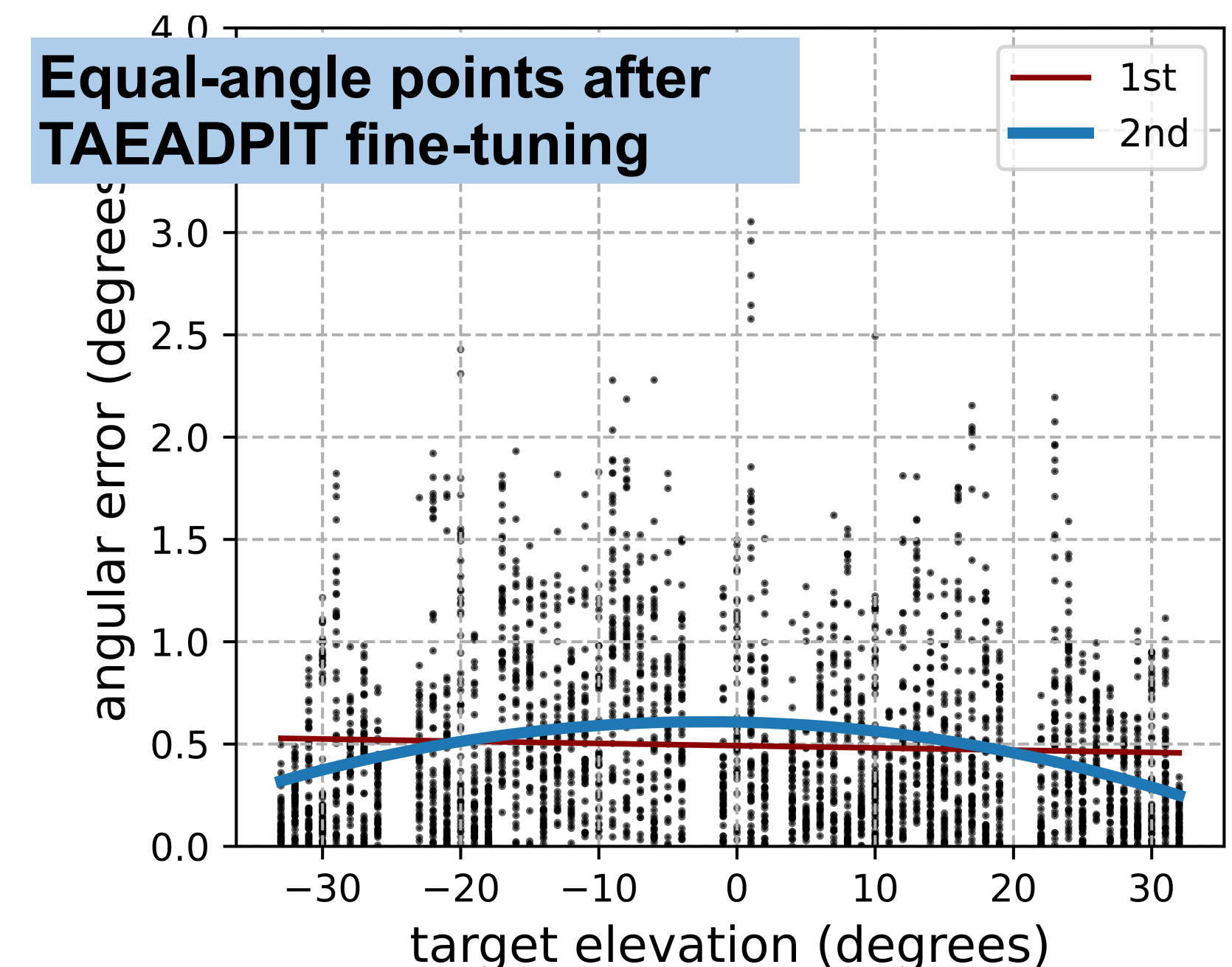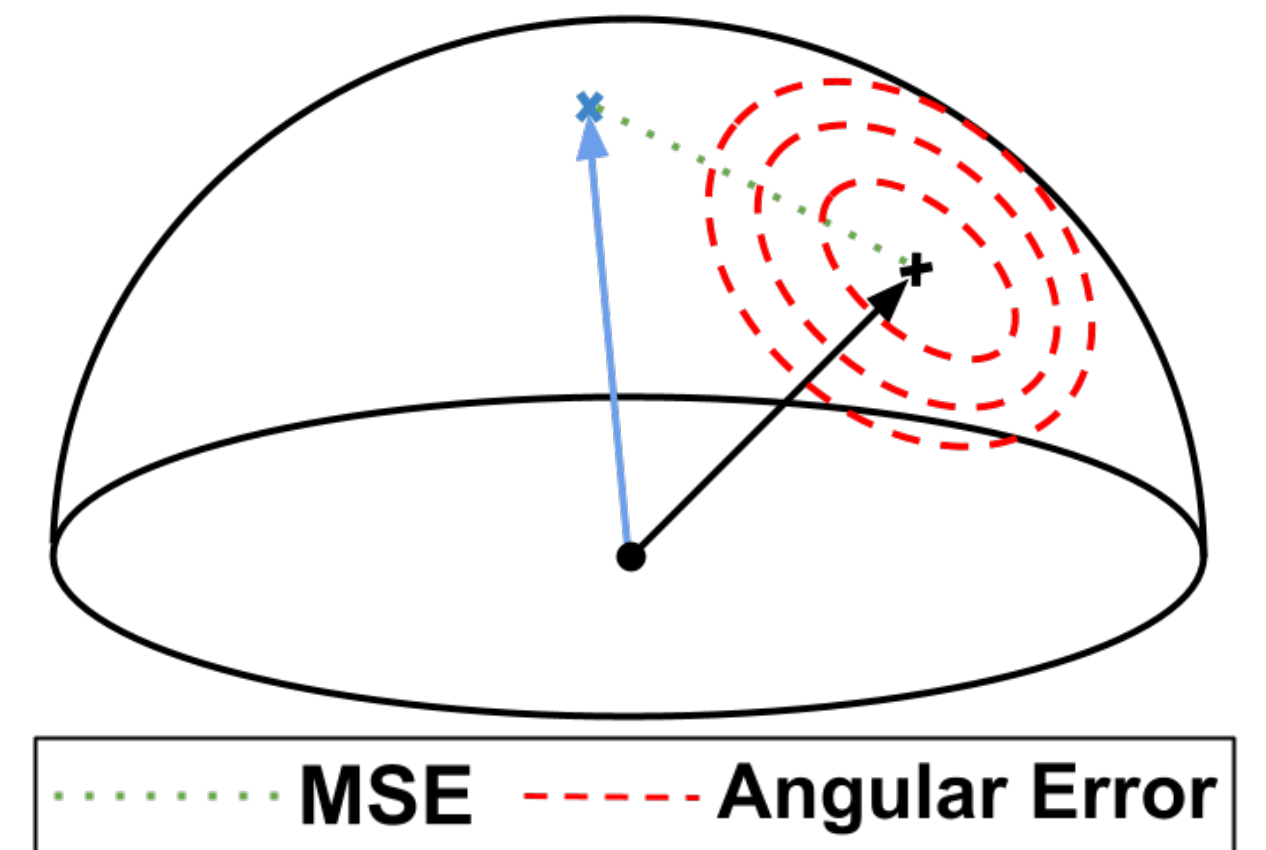 **Result:** reduce equal-angle impact

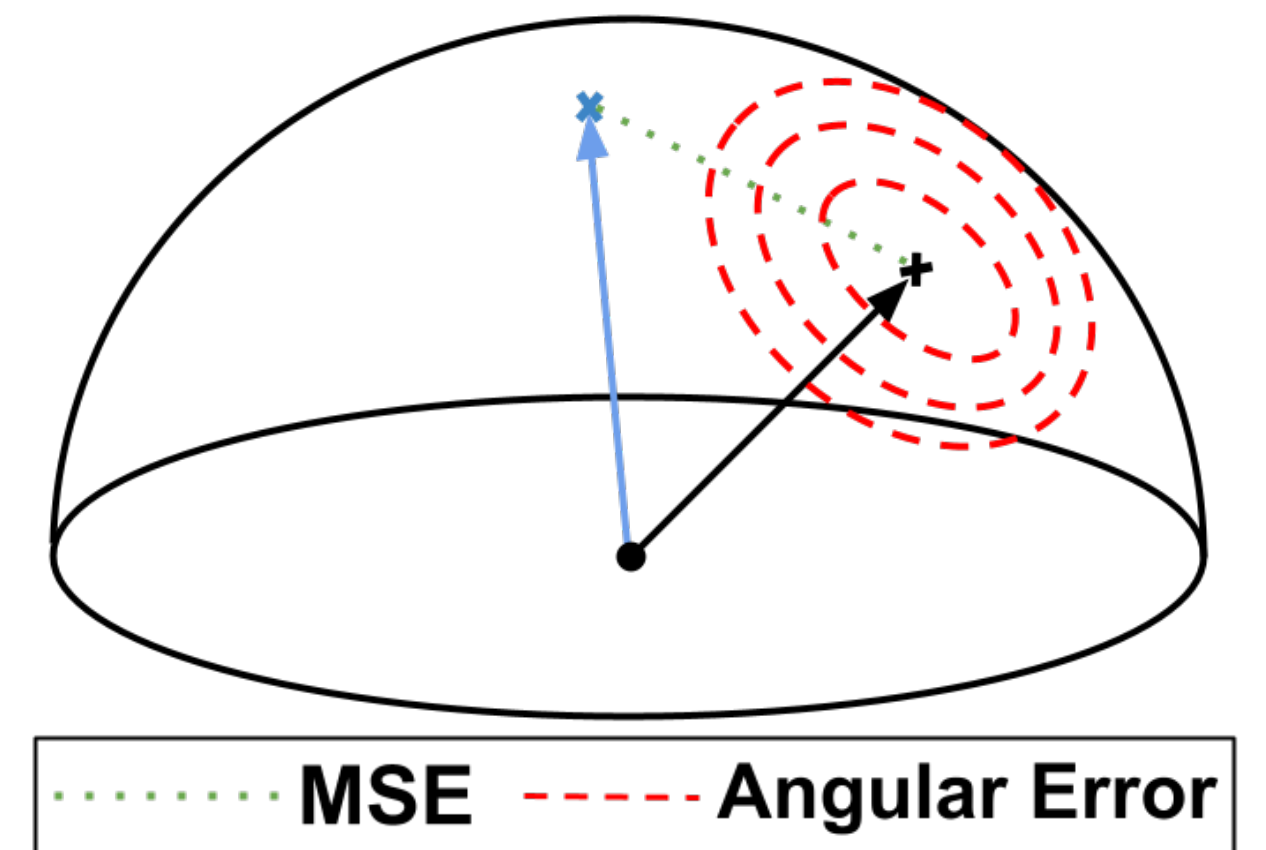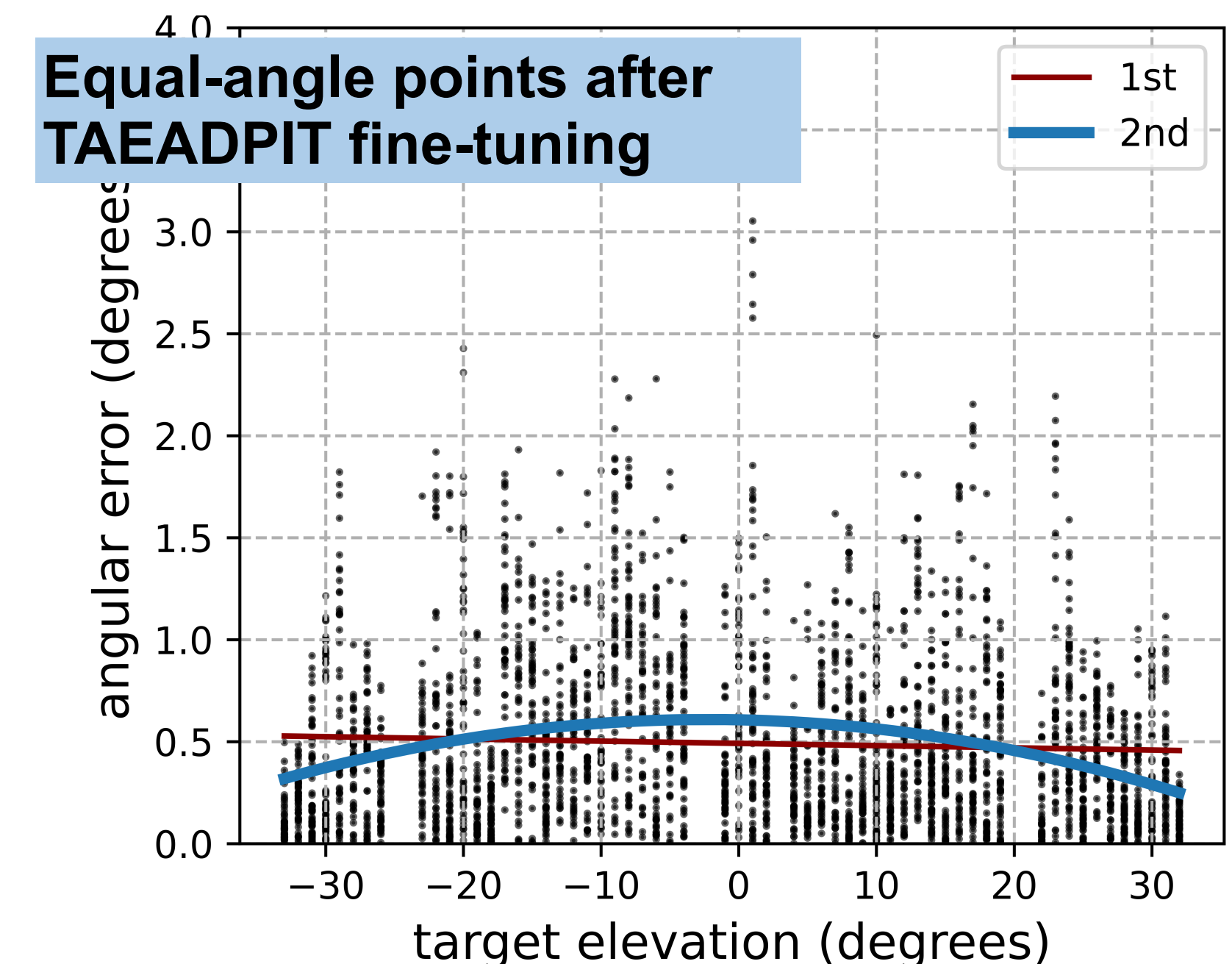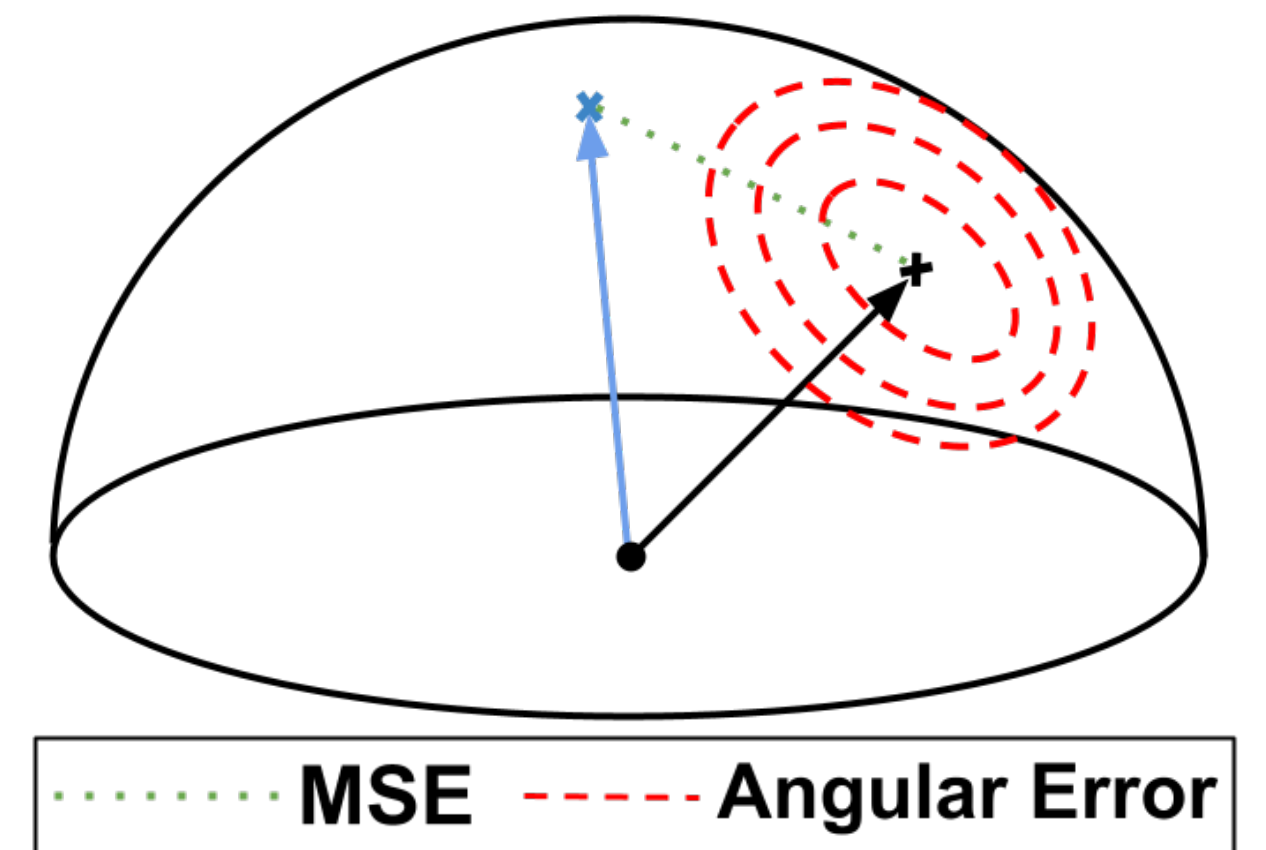- **Experiment 2:** DCASE22 SELD baseline model performance with TAEADPIT loss
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