

# ALGEBRAIC EQUATIONS IN STATE CONDITION

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ABSTRACT. We can determine the semi-stability of an arbitrary Hilbert point by solving finitely many decision problem **ESC** when the ambient space is the projective space. We will introduce the problem **ESC** and show that the **ESC** is NP-hard. In [1], It has been showed that the problem **SC**, which seems to be much easier than **ESC**, is also NP-hard. This result shows that it is *very hard* to determine the semi-stability of an arbitrary Hilbert point in the viewpoint of computational complexity theory.

## REFERENCES

- [1] Cheolgyu Lee. Algebraic equations in state condition. *Proc. Amer. Math. Soc.*, 146(4):1495–1503, 2018.

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