

Development of receiver optics components using AM technology

NAOJ is performing R&D studies related to additive manufacturing (AM) technologies based on metal 3D printing. This technology is evolving day by day in the world, both instruments and methods, and is used for diverse industries, e.g., aerospace, medical, automotive, ISS. Benefits of AM are rapid prototyping, design optimization with topology methods, cost and lead time reductions. We have focused this research on the development of receiver optics component, especially the ALMA Band1 corrugated horn. Through these studies, we have also learned some practical disadvantages of additive manufacturing, which need to be compensated by other existing technologies. In addition, the material/physical properties of components produced by AM should be checked carefully because they may change during the manufacturing process and through aging. We will present the current status of this research and would like to discuss the usefulness of AM for the development of future receivers.

Author: KANEKO, Keiko (National Astronomical Observatory of Japan)

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