

## **A development of compact triple band receiver for millimeter-wave radio astronomy**

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We have developed a compact triple-band receiver which enables simultaneous observations in the three frequency intervals K(18–26 GHz) band, Q(35–50 GHz) band, and W(85–115 GHz) band. The quasi-optics design enables the triple-band receiver to fit into a single cryostat with some of the mirrors and dichroic filters outside the cryostat. The expected size of total receiver system is 640 mm(W) x 940 mm(L) x 350–400 mm(H) including the optical circuit. When compared with the present KVN optical bench of size 2600 mm x 2300 mm x 60 mm, the designed system is significantly more compact and is tailorable for use in telescopes with a small receiver cabin.

The receiver performance and test observation results will be presented.

We have shown that it is possible to design a quasi-optical circuit that has simultaneous observation capability for three frequency bands, and that ultimately this concept may lead to development of much more compact multi-frequency receiver systems for mm-wave and sub-mm radio telescopes.