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Design and construction of heterodyne collective scattering system on J-TEXT

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A heterodyne collective scattering system is designed and constructed to investigate turbulent transport in J-TEXT. The laser sources consist of two separately pumped HCN gas lasers at 337 μm. A new structure is adopted in the resonated cavity to enhance the stability of output signal. The intermediate frequency is about 2.6MHz when there is a 10um cavity length difference and capable to maintain stability more than 5 hours without manual control. Scattered radiation at three different angels($0 \leq k_{\perp} \leq 12 cm^{-1}$) will be collected by diode mixers to observe low-frequency density fluctuations distribution. The system has been installed and results of commissioning will be presented.