

# Turbulence-driven temperature fluctuations in H II regions

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Accepted XXX. Received YYY; in original form ZZZ

## ABSTRACT

Turbulence can cause temperature fluctuations via two mechanisms in H II regions, via a direct mechanism, and by an indirect mechanism. In the direct mechanism, dissipation of the turbulent kinetic energy acts as a fluctuating heating source for the gas. In the indirect mechanism, the shocks cause density fluctuations, which modulate the ionizing flux that arrives at the outer parts of the H II region, causing the boundary to move in and out, transitioning between a recombination front and an ionization front. If the modulation timescale corresponds to the recombination timescale, then a portion of the gas is out of thermal equilibrium.

**Key words:** HII regions – ISM: kinematics and dynamics – turbulence

## 1 INTRODUCTION

### DATA AVAILABILITY STATEMENT

All data and accompanying analysis programs used in this paper are available from the github repository <https://github.com/will-henney/turb-t2-paper>.

## References

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