**Active particle recoil as the limiting mechanism of the brightness of astrophysical masers**

**Strel’nitskii V.S.**

[**Maria Mitchell Observatory**](http://en.wikipedia.org/wiki/Maria_Mitchell_Observatory)**,** [**Massachusetts**](http://en.wikipedia.org/wiki/Massachusetts)**, U.S.A.**

The recoil effect creates an inward component of the bulk velocity of the outer layer of a gas maser moving the active molecules in this layer out of the coherence with the radiation coming from deeper layers. This sets a strict upper limit on the integrated (over frequencies and directions) output flux. With the anticipated 1.35 cm water maser beam widths (~1 ster) and water abundance in the strongest H2O masers (~10-4), the upper limit on the maser brightness temperature due to this mechanism is Tb <~ 1018 K.