Generators and relations for the Haagerup planar algebra
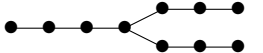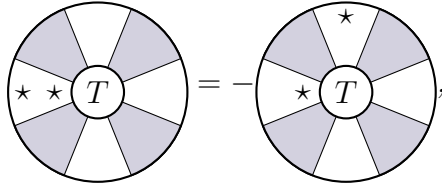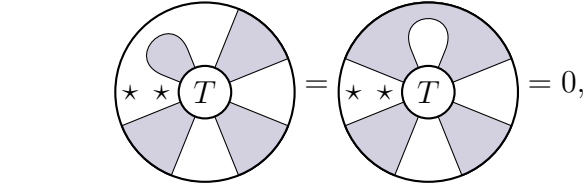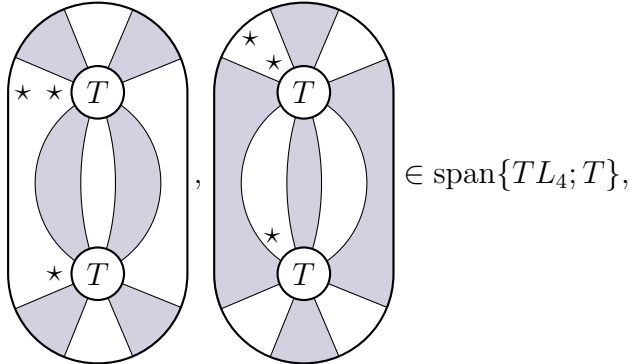## Emily Peters, 12-12-2008

Definition. The Haagerup planar algebra is a subfactor planar algebra with principal graph $H =$.
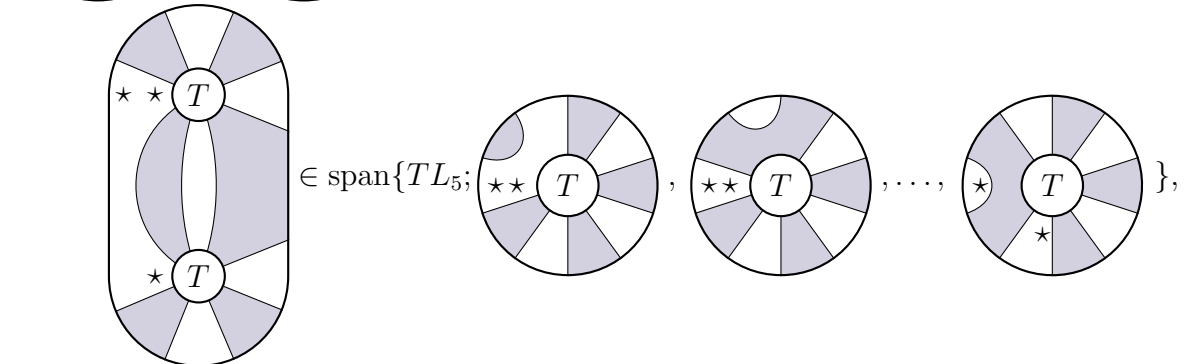
Theorem 1. *The Haagerup planar algebra exists; it is generated by T, an element with eight strands, subject to the relations*
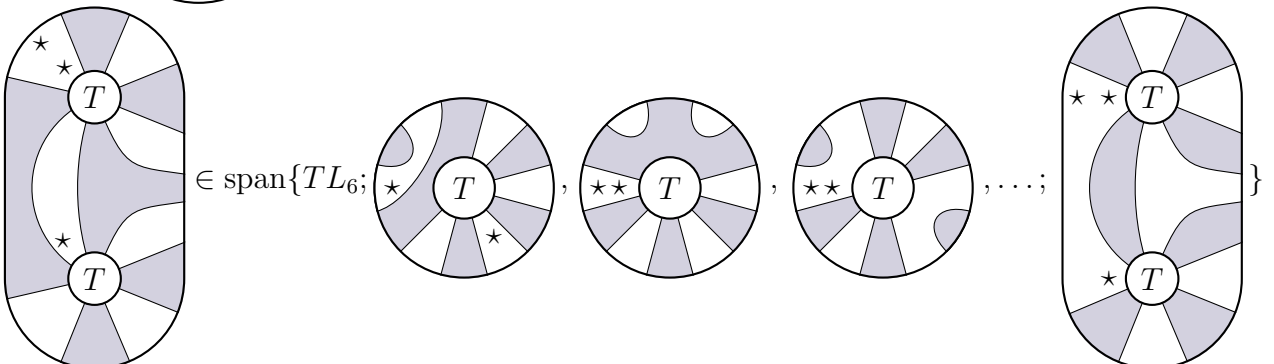
- *A closed loop counts for $\delta = \sqrt{\frac{5+\sqrt{13}}{2}}$,*
- $T = T^*$,

 $\in \operatorname{span}\{TL_4; T\}$,

 $\in \operatorname{span}\{TL_5;$ $\}$,

 $\in \operatorname{span}\{TL_6;$ $\}$

Proof. The hardest part is showing that every closed diagram can be evaluated using these relations. We show this inductively, on the number of Ts in the diagram.

No Ts: Temperley-Lieb

One T: Self-cap

Many Ts: Look for, or create, a pair connected by three (or more) strands. This will allow us to directly reduce the number of Ts.

EG: