Ray Tracing CSG Models
operator
- Intermediate nodes specify combination
- Leaf nodes are primitive objects

Use tree structure
- Booleans are union, intersection, difference
- Objects

Form object as booleans of primitive
Intersection
Controlling the Combination
Tree Structure

T3 rectangle

T1 circle

T2 rectangle

T4

T5
Tree Structure

- Intersect ray with leaf nodes (primitive objects)
- Combine intersection spans according to intermediate nodes
- Union
- Difference
- Might create multiple spans

Intersect ray with leaf nodes (primitive objects)
Union of Spans
Difference of Spans
Normals

- Intersection is
- \( \min \) of positive object
- \( \max \) of negative object
Bounding Volumes

- Use bounding volumes at least nodes
- Union bounding volumes at interior nodes
- Use bounding volumes at leaf nodes

T_3

T_1

T_2

T_4

T_5