A Proof System for Separation Logic with Magic Wand

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**Preliminary**
- A proof system for full separation logic
- Also with a magic wand
- Developed in the style of sequent calculus

**Formulas in Separation Logic**
- Classical first-order logic
- Intuitionistic linear logic

**World Sequents Represent Graphs of Heaps**
- Magic Wand $A ightarrow B$
- If the current heap is extended with a separate heap for which $i$ holds, then $j$ holds for the combined heap.

**World Sequents**
- Expression relations
- Expression relations
- Heap relation
- Heap relations
- Truth contexts
- Falsehood contexts
- Heap sequents
- World sequents

**World Sequents**
- Implication
- Conjunction
- Implication
- Conjunction

**Conclusion**
- $P_{	ext{ps}}$ gives a direct proof search strategy.
- Extensible
- Ex. overlapping conjunction (Press and Viswanath 2013)
- Working on extensions with inductive predicates

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