MIPSRAY: A Ray Tracer

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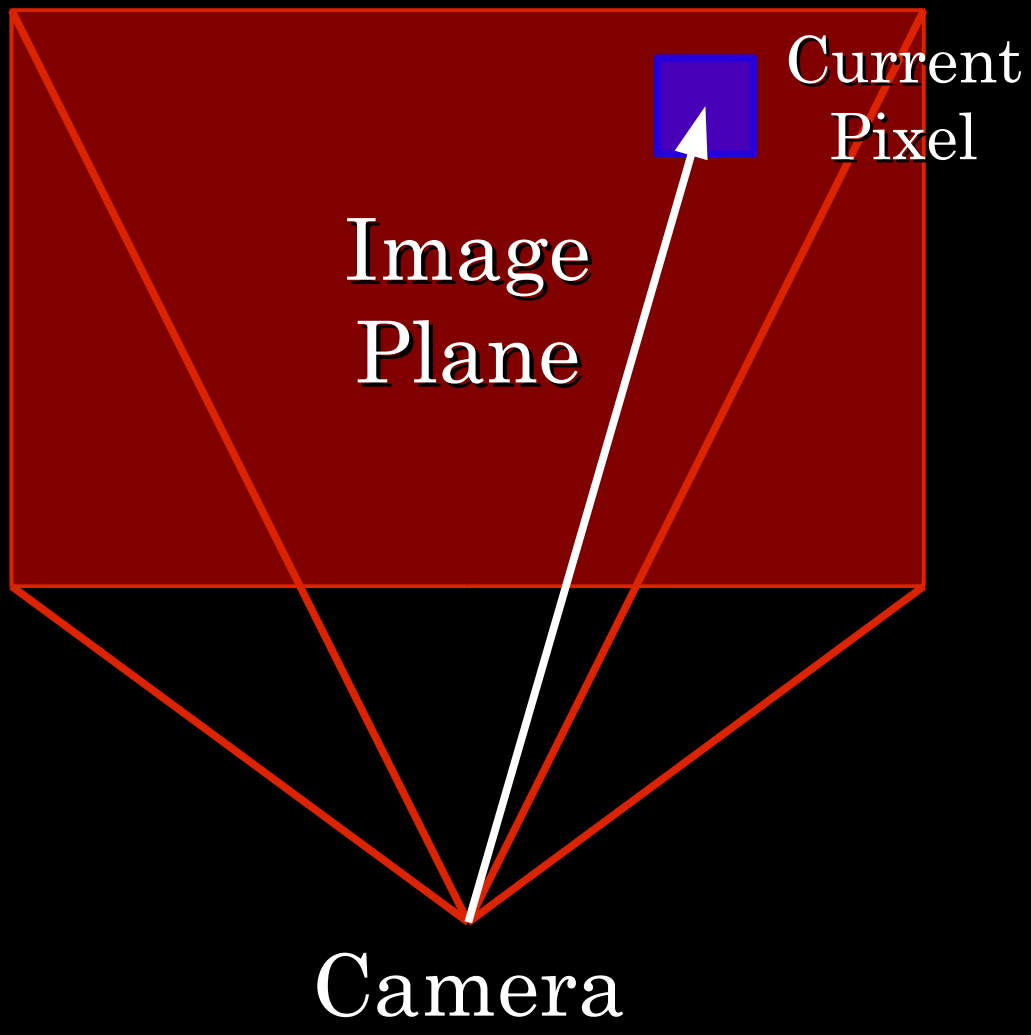
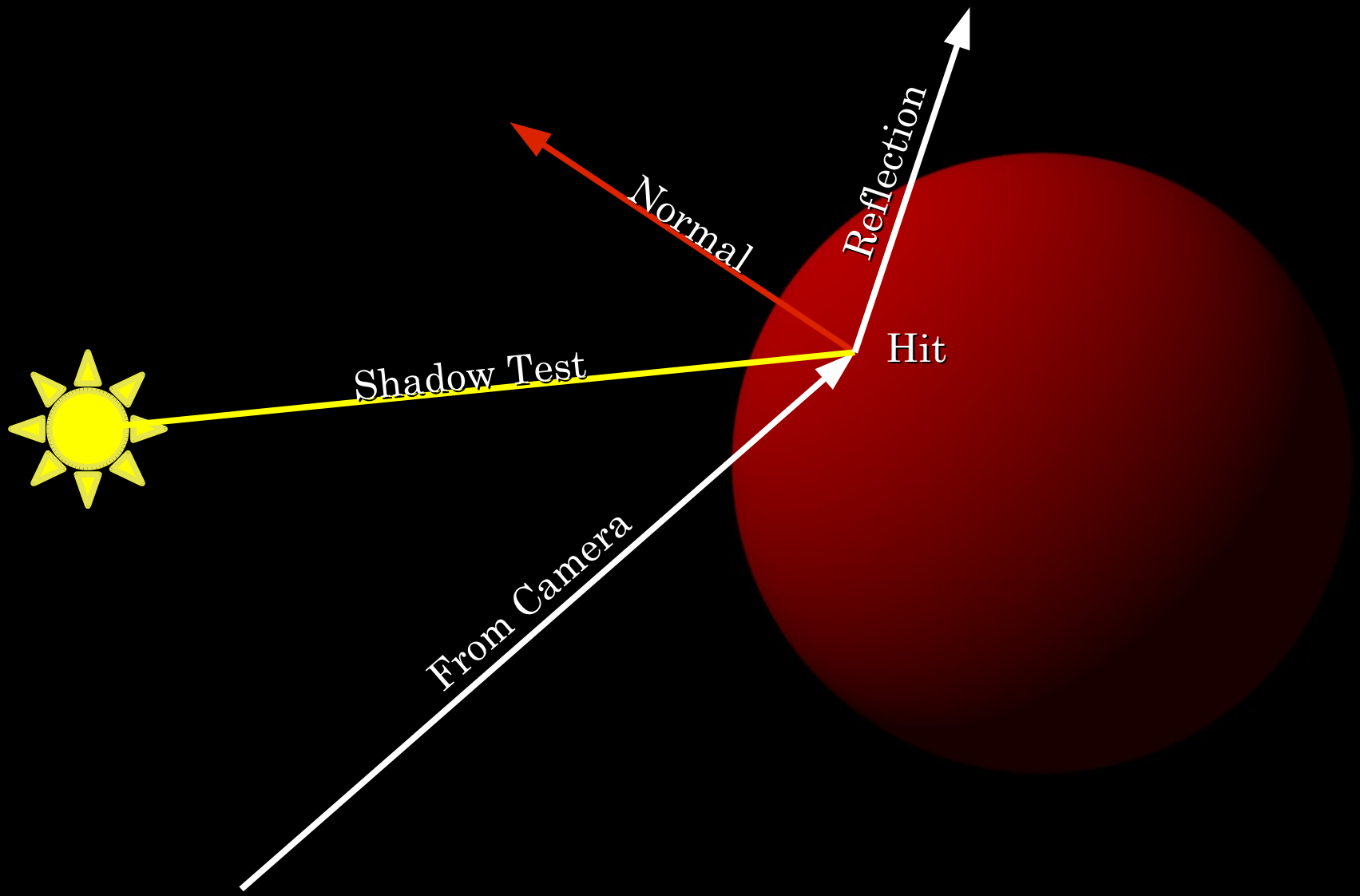
EECS 314: Computer Architecture

Ray Tracer Overview

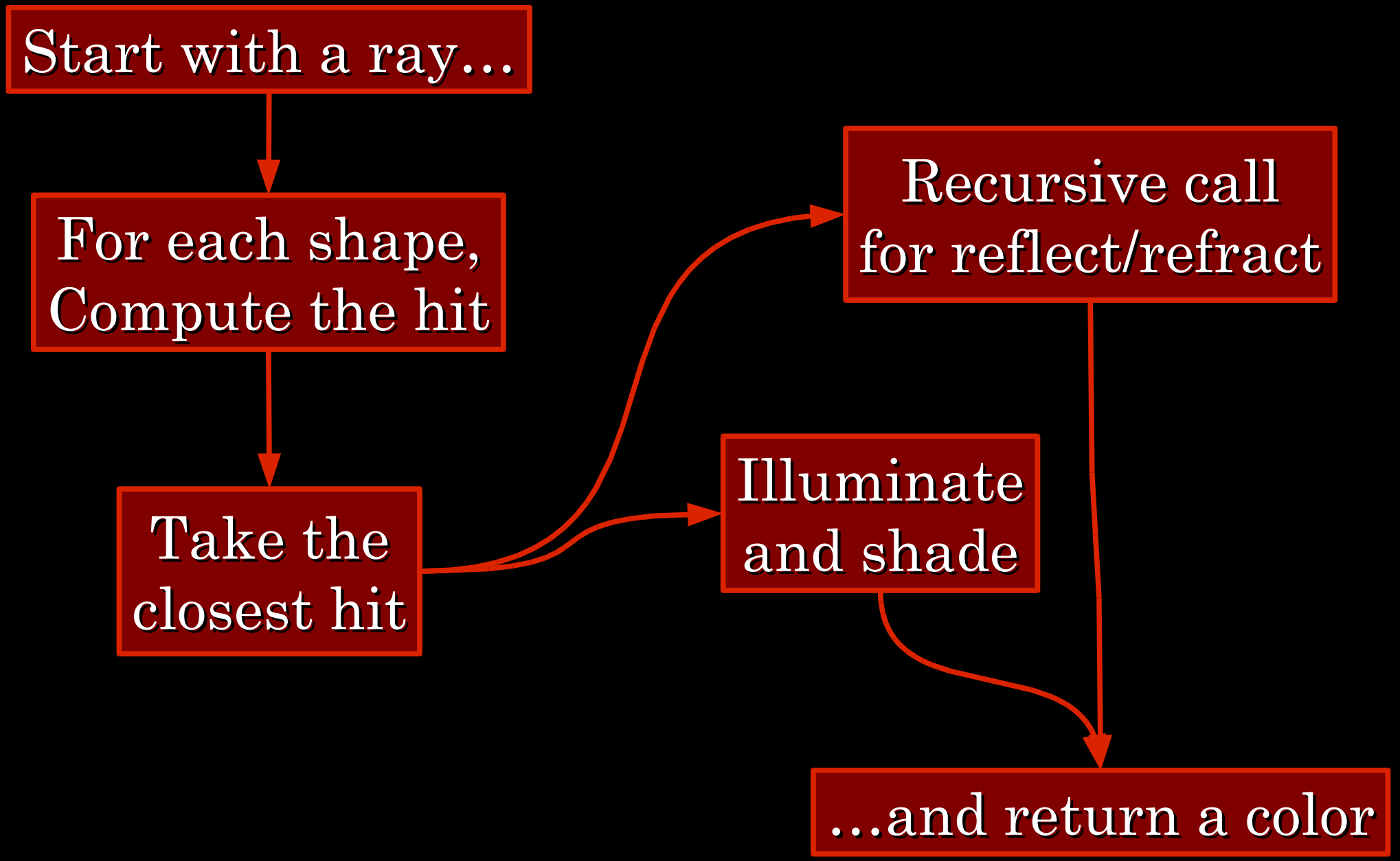
The Camera Ray



The Ray Tracing Algorithm



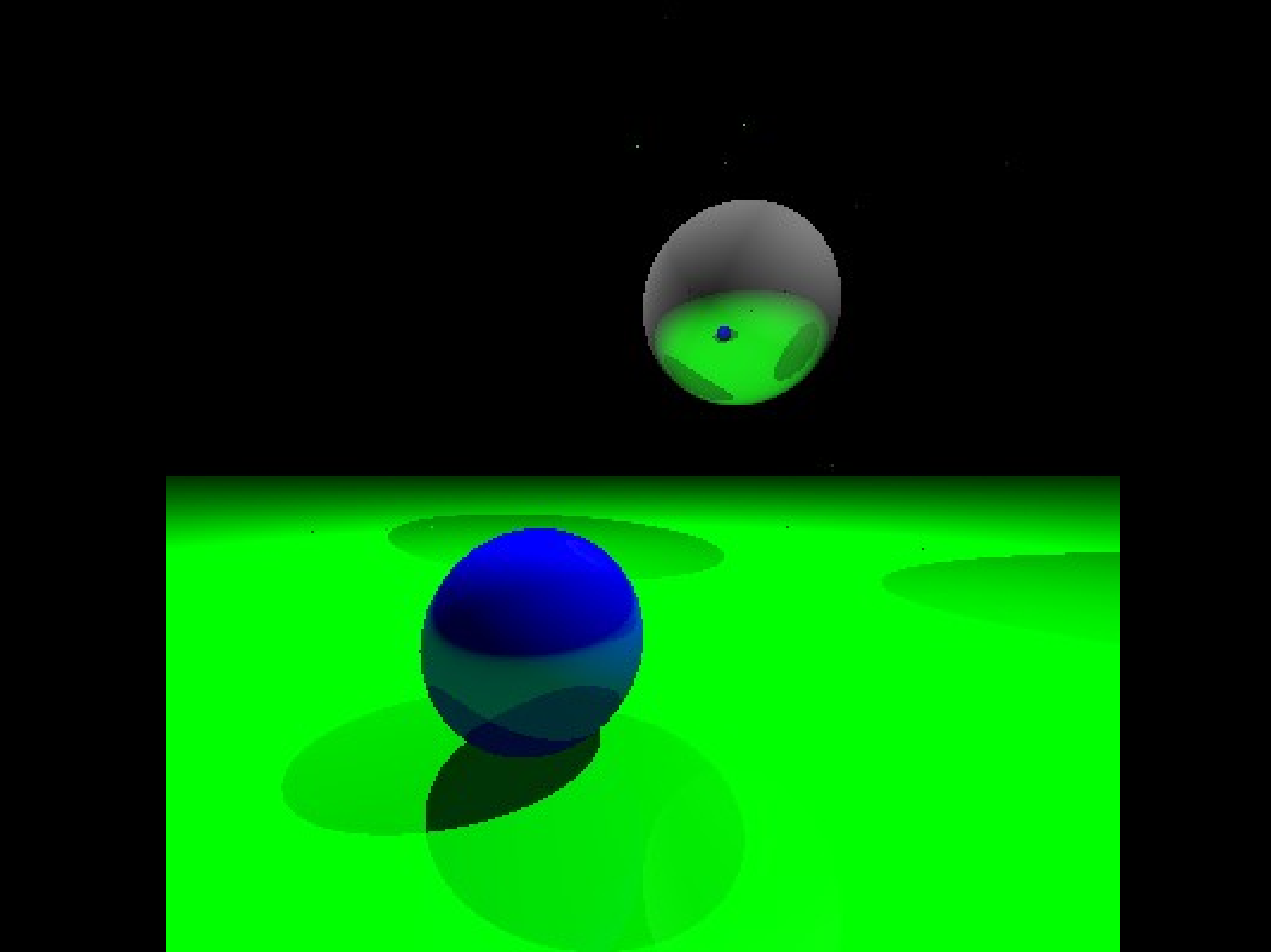
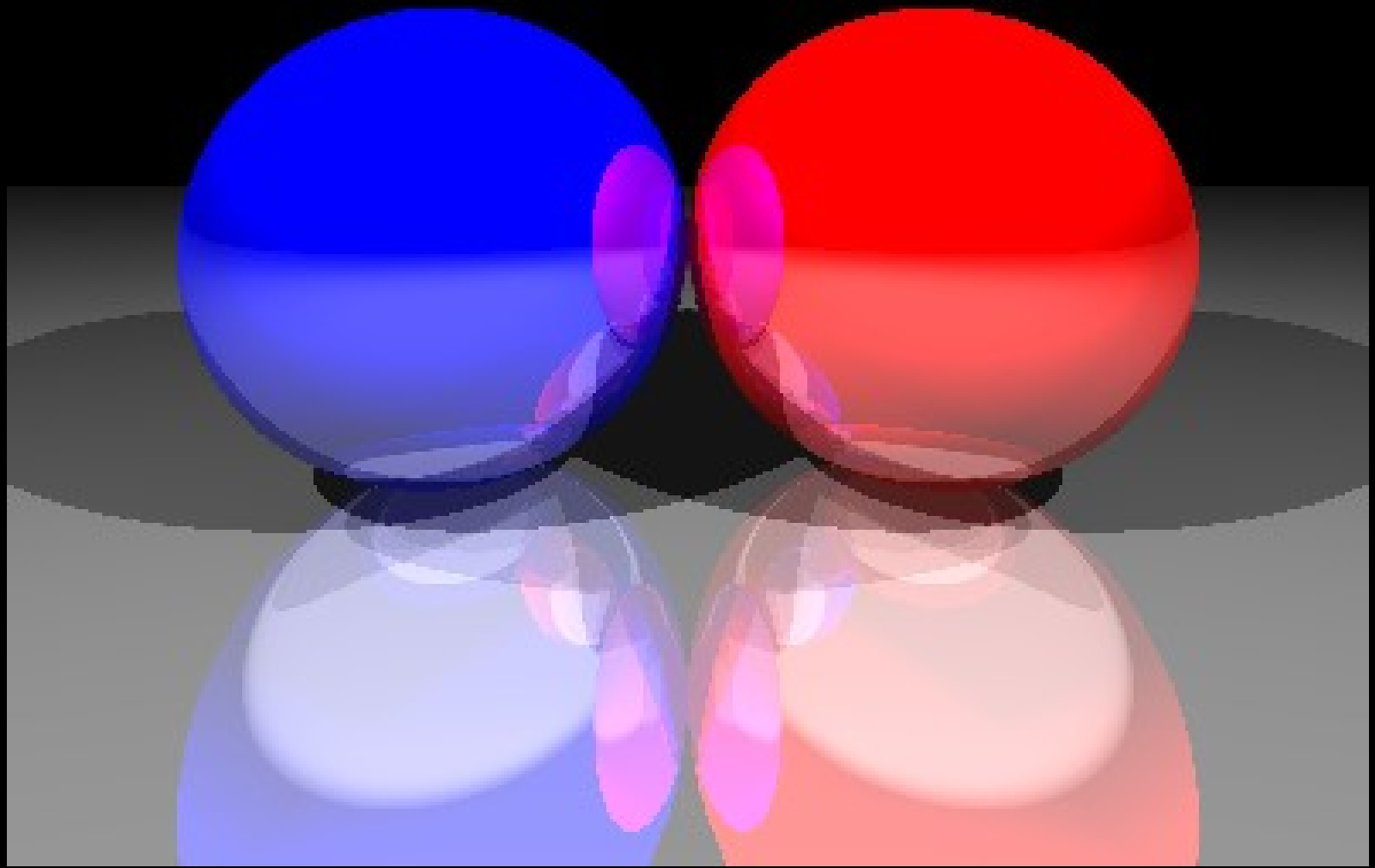
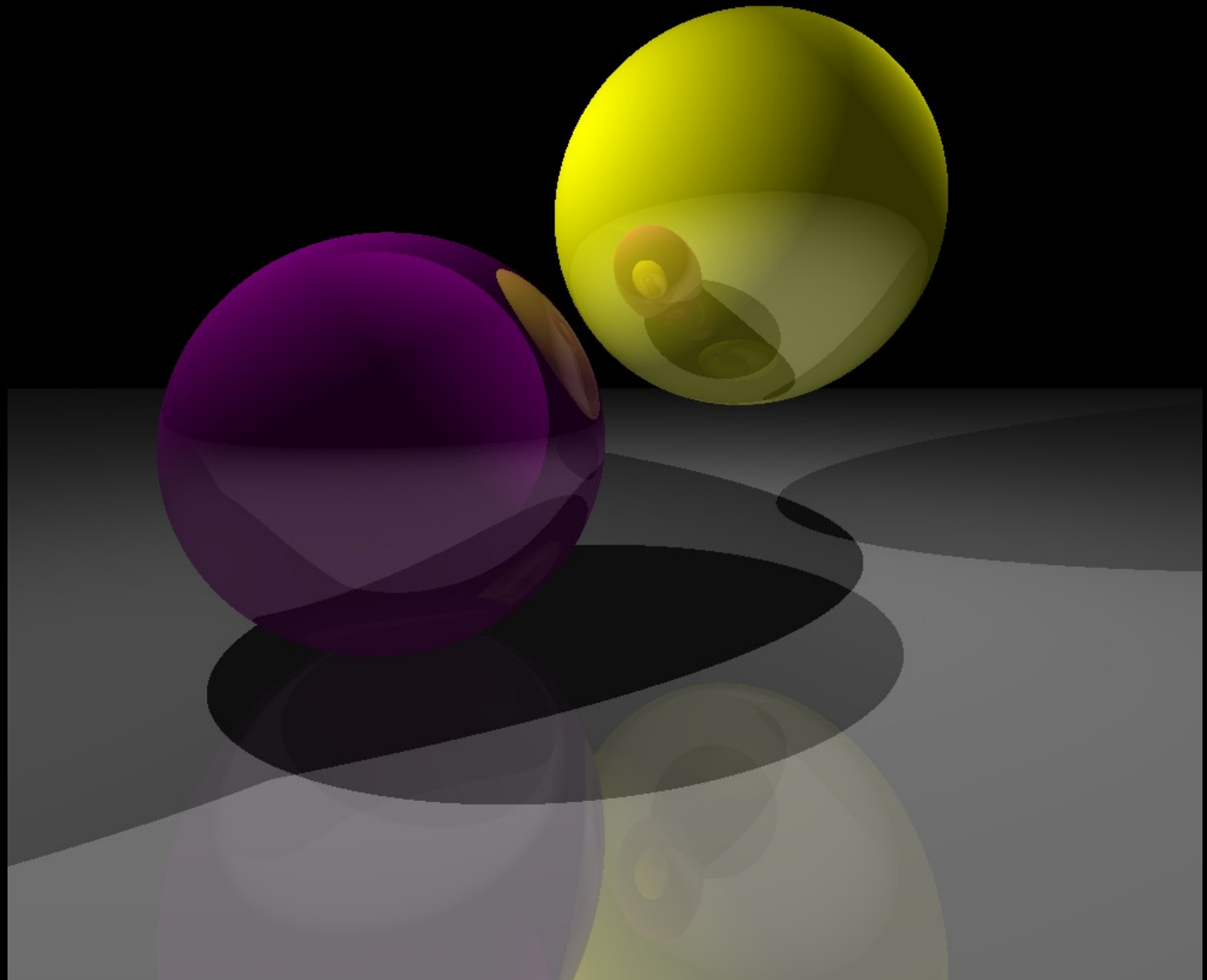
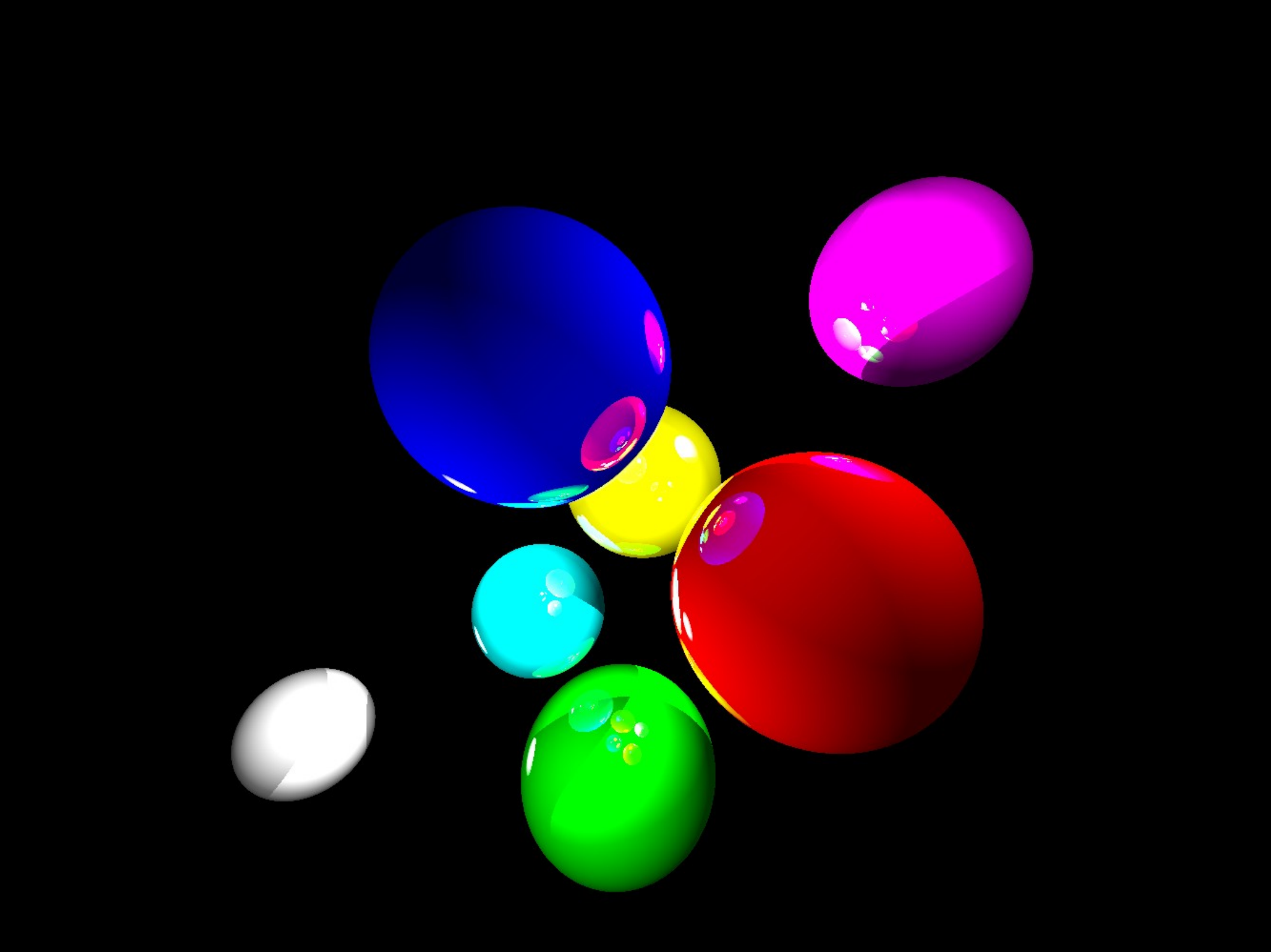
The Ray Tracing Algorithm



Implementation Challenges

- Repeated vector arithmetic
  - Module (add, subtract, scalar, cross, dot, norm)
- Root solvers (linear, quadratic)
- Shape solvers (sphere, plane)
- BMP file format
- Debugging

Missing Features

- More shapes!
  - Polynomials of higher and higher degree
- Anti-aliasing
- Textures
- Transformations

Pretty pictures!