Fast Resistive Bolometry  JEFFREY GRAHAM, SETTHIVOINE YOU, PAUL BELLAN, Caltech — A bolometer with microsecond scale response time is under construction for the Caltech spheromak experiment to measure radiation from a ∼20 µs duration plasma discharge emitting ∼10^2—10^3 kW/m^2. A gold film several micrometers thick absorbs the radiation, heats up, and the consequent change in resistance can be measured. The film itself is vacuum deposited upon a glass slide. Several geometries for the film are under consideration to optimize the amount of radiation absorbed, the response time and the signal-to-noise ratio. We measure the change in voltage across the film for a known current driven through it; a square pulse (3—30A, ∼20 µs) is used to avoid Joule heating. Results from prototypes tested with a UV flashlamp will be presented. After optimizing the bolometer design, the final vacuum-compatible diagnostic would consist of a plasma-facing bolometer and a reference in a camera obscura. This device could provide a design for fast resistive bolometry.