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SOFOS: The Scanning Observatory For Optical SETI CORBIN COVAULT, Department of Physics, Institute for the Science of Origins, Case Western Reserve University — Since the 1960's scientists have searched for evidence of extraterrestrial civilizations using large radio telescopes. However, signals sent at optical wavelengths may be a more promising means of interstellar communications. Such signals may be sent in the form of very rapid (nanosecond) light pulses generated by large lasers. In principle, optical telescopes equipped with high-speed light sensors can be used to detect such signals. Already, several groups have initiated preliminary search efforts. Here we describe the design for the Scanning Observatory For Optical SETI (SOFOS). Our design is modular and can be implemented based on available technology. We use a set of four individual fixed-heading telescope modules to scan the sky as it moves overhead. Each telescope includes a large area Fresnel lens (3.5 by 3.5 meters) and an array of photomultiplier tubes. The lens sits on a tiltable rotation stage allowing access to the entire northern hemisphere sky for signals. The four telescope modules will be operated in coincidence so as to minimize the chance of recording false signals due to background light fluctuations and cosmic ray events. Our design yields a sensitivity to light flashes of less than 10 photons/m^2, a significant improvement over prior searches.

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