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Self-Assembly of Colloidal Particles by Optical Binding DOMINIQUE DAVENPORT, UC Merced — The properties of a material can be altered by assembling that material into particular microscopic patterns. The result is a metamaterial, which offers an avenue for creating exotic material properties not seen in nature. In principle, such a material could be created through self-assembly, however, it is difficult in practice to control the interactions between constituent particles. One potential method for doing this is optical binding, which is a highly tunable inter-particle force mediated by an intense optical field. We wish to develop tools, including experimental apparatus and numerical models, that can help demonstrate the self-assembly capabilities of the optical binding force.

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