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Many of the most significant and fundamental partial differential equations are associated with underlying geometric and algebraic structures, such as elliptic complexes and their cohomology and Hodge theory. These structures strongly govern behaviors of the equations such as their well-posedness. Such equations arise in numerous applications, including electromagnetics, solid mechanics, fluid mechanics, and general relativity, and their accurate numerical solution is of great importance. But, in many cases, finding accurate numerical methods has proven difficult or impossible. Over the last decade it has become clear that, when the PDEs are discretized for numerical computation, the structures underlying the PDEs must be preserved at the discrete level in order to obtain stable and consistent discretizations needed for convergence. This realization has given rise to structure-preserving discretization, an approach to the discretization of differential equations which brings fields as diverse as geometry, topology, homological algebra, functional analysis, and representation theory to bear on numerical analysis. The new viewpoint has led to remarkable progress, resulting in effective new numerical methods for problems where they were previously unavailable. (Received September 1, 2020)