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Magnetism as the emergent phenomena

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Versatile emergent phenomena have been observed in strongly correlated electron systems as a consequence of mutual strong coupling among the spin, orbital, and charge degrees of freedom. Here, we would overview the outcomes of topological spin textures in transport, dielectric, and optical properties of correlated systems; these include sciences of colossal magnetoresistance, multiferroics, skyrmions, and topological/quantum-anomalous Hall effects. Impacts of the emergent electric and magnetic fields acting on the electrons in a solid are discussed as well as their possible applications to future devices.