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Variational Methods., Geometric Measure Theory

- In the theory of calculus of variations, we are mainly interested study the partial regularities and singular structures of the minimizing mappings of energy functionals under various conditions originated from geometry and physics and their relations with the geometric and topological structures of the target spaces.

- Quantitative Geometric Measure Theory: For some subsets of Euclidean space, we look for suitable Hausdorff measures so that these subsets are appreciable with respect to these measures. Using these measures, we can decompose the subset into the union of subsets of different dimensions, study the geometric properties of each subset, for example, smoothness of the set and its curvatures and investigate how these subsets are patched back to the original subset.