Lectures on Regularity Theory for Mean Curvature Flow

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We consider the motion of surfaces whose normal velocity at every point is given by the mean curvature at that point. This geometric heat flow process is called mean curvature flow. In physics, it arises as a model for the motion of natural interfaces such as grain boundaries. Stationary solutions of the flow are minimal surfaces, that is surfaces with vanishing mean curvature which model equilibrium interfaces such as soapfilms. Mean curvature flow and related flows are an important tool in mathematics and mathematical physics. An example of this is the recent solution of the famous Penrose conjecture in General Relativity by Huisken and Ilmanen which was based on a curvature flow approach.

Under mean curvature flow, surfaces usually develop singularities in finite time. In this lecture series we will present techniques used in the study of singularities of mean curvature flow. The lecture material will be largely based on the work of K. Brakke on regularity theory for mean curvature flow although more recent developments will also be presented. Relations to the regularity theory for minimal surfaces as in Allard's and de Giorgi's work will be explained as well.

Zeiten: Montag, 14:15–16:00, Mittwoch, 16:15–17:00

Ort: Hörsaal 226, Hermann-Herder-Str. 10

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