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WORKSHOP “DISORDERED SYSTEMS: SPIN GLASSES”
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Glasses, jamming and spin glasses

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The glass problem has been around for decades. The task is to provide a quantitative description of the growing relaxational timescales which arise as the temperature is lowered in supercooled liquids. In recent years it has been discovered that associated with the growing timescale there is an increasing lengthscale. Using an effective potential method, a replica formalism is set up for describing supercooled liquids near their glass transition. The resulting potential is equivalent to that for an Ising spin glass in a magnetic field. Results taken from the droplet picture of spin glasses are then used to provide an explanation of the main features of fragile glasses. Finally, some preliminary results from simulations of the jamming of hard discs will be outlined which provide a quantitative test of the spin glass approach to glasses.