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Abstract: *These are the lecture notes of the summer (by definition) graduate minicourse at Helsinki University of Technology, 6-8.09.2004. The topics of the course are: "simple" Markov diffusions in $\mathbb{R}^d$ with equilibrium or stationary measures; recurrence properties and convergence to a stationary measure; "strong" and "weak" discretisation problems; convergence to equilibrium for approximations; invariant measures depending on a parameter, their smoothness. The author thanks Helsinki University of Technology for hospitality which made it possible to prepare this minicourse as a part of the programme "New Techniques in Applied Stochastics", 2004-2005, supported by Finnish Mathematical Society and the Finnish Academy*

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