SFB-Seminar, "Kosmologie" (Teilprojekt C8)

ZEIT:
8.11.2016, 15:00 Uhr - 18:00 Uhr

ORT:
IRIS Haus R2.07, HU

PROGRAMM:

15:00 - 15:30 Kaffeepause

15:30 - 16:30 **Prof. Dr. Hans Ringstroem (KTH Royal Institute of Technology Stockholm, Sweden)**

On the cosmic no-hair conjecture in the Einstein-Vlasov setting
The standard starting point in cosmology is the assumption of spatial homogeneity and isotropy. However, it is preferable to prove that solutions generally isotropise and that the spatial variation (as seen by observers) becomes negligible. This is expected to happen in the presence of a positive cosmological constant; in fact, solutions are in that case expected to appear like the de Sitter spacetime to observers at late times. The latter expectation goes under the name of the cosmic no-hair conjecture. In the talk, we present a result (based on joint work with Håkan Andréasson) concerning a class of spacetimes (T^3-Gowdy, in the Einstein-Vlasov setting) whose members are neither spatially homogeneous nor isotropic, but which all satisfy the cosmic no-hair conjecture. Moreover, we demonstrate that the members of this class are future stable under general perturbations (without symmetries), and that the perturbed solutions satisfy the cosmic no-hair conjecture.

16:30 - 17:30 Kaffeepause

17:00 - 18:00 **Bernhard Brehm (FU Berlin)**

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Particle Horizons in the Mixmaster Universe

The Mixmaster Universe has been proposed by Misner (1969) as a model for a chaotic big bang cosmological singularity. This cosmological model describes Bianchi IX spatially homogeneous, anisotropic vacuum space-times. In 1970, Belinskii, Khalatnikov, and Lifshitz (BKL) conjectured that particle horizons form towards the big bang. In other words, backwards light-cones remain spatially bounded, and spatially separate regions causally decouple.
We prove this BKL conjecture, for almost every solution.
More specifically, the answer to this question depends on the convergence speed towards the Mixmaster attractor. Ringström (2001) showed that this convergence occurs at all. We introduce a novel expanding measure in order to prove that the convergence is fast enough to guarantee the formation of particle horizons for Lebesgue almost every solution.
The talk is addressed at a nonspecialist audience.

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