



## Sommerfeld Theory Colloquium

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ASC-PhD-Colloquium: Strings in non-geometric backgrounds

Being extended objects, strings probe the spacetime very differently from usual point particles. This becomes especially important in compact spaces like a circle. While both, strings and particles, have quantised momentum on that circle, only (closed) strings can wind around the circle. Therefore strings need another quantised variable, the winding number, that counts how often the string winds around the circle. Intriguingly the string theory stays invariant if one inverts the radius of the circle and simultaneously interchanges the winding number and the momentum number. This famous duality is called T-duality. As it turns out, string theory is perfectly well defined on spaces that use this T-duality for the transition function between the patches of the manifold. Since this involves a non-continuous inversion of the radius such space are clearly not a usual geometric manifold. Strings can therefore propagate on spaces that are non-geometric. We will argue that one can still give a kind of geometric meaning to such non-geometric spaces. We show that one can often identify a geometry that under a certain perturbation flows towards the non-geometric background. There are furthermore hints, that the non-geometric spaces might actually be described by non-commutative or even non-associative manifolds. We will discuss recent progress and problems in attempts to formulate a gravity theory on stringy non-associative spaces.

Wednesday, 14 November 2018, 16:45h, Room A348, Theresienstr. 37 / III

Prof. D. Lüst