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The Brach Cut Universe: from the origin of the universe to the formation of compact stars

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In this contribution we identify two scenarios for the evolutionary branch cut universe. In the first scenario, the universe evolves continuously from the negative complex cosmological time sector, prior to a primordial singularity, to the positive one, circumventing continuously a branch cut, and no primordial singularity occurs in the imaginary sector, only branch points. In the second scenario, the branch cut and branch point disappear after the {\it realisation} of the imaginary component of the complex time by means of a Wick rotation, which is replaced by the thermal time. In the second scenario, the universe has its origin in the Big Bang, but the model contemplates simultaneously a mirrored parallel evolutionary universe going backwards in the cosmological thermal time negative sector. A quantum formulation based on the WDW equation is sketched and preliminary conclusions are drawn. Finally, a description of the evolutionary process of the branch cut universe, from its beginnings to the creation phase of compact stars is proposed.

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