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New Static Spherically Symmetric Spacetime Teleparallel $F(T)$ Gravity Solutions

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We are interested in the static spherically symmetric geometries in $F(T)$ teleparallel gravity with physical importance. We have found the general forms of the spherically symmetric frame with zero curvature, metric compatible and non-zero spin connection. We then analyse the antisymmetric field equations (the solutions splitting into two separate cases), and derive and analyse the resulting symmetric field equations. For studying the applications of spherically symmetric teleparallel models, we have studied the static spherical symmetric by solving the antisymmetric field equations and by setting the final static symmetric field equations to solve. Then, we solved these field equations for vacuum spacetimes and obtain a number of new $F(T)$ solutions. Finally, we have proposed some insights and aims for perfect fluids new possible $F(T)$ solutions in some recent works.

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