

Abstract Submitted
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The Equivalence Problem: Einstein-Maxwell Solutions REBECCA WHITNEY, CHARLES TORRE, Utah State University — The “Equivalence Problem” is part of the Digital Einstein Project. The goal of this project is to create a digital and interactive library of all known solutions to the Einstein field equations in general relativity. The “Equivalence Problem” involves determining when two solutions are physically equivalent. This requires calculating physical and geometric features to characterize each solution independently of any coordinate system. One of the principal features used to characterize the solutions is the degree of symmetry or the isometry group of the space-time metric. We have focused on the solutions to the Einstein-Maxwell field equations and compared the isometry group of the space-time metric to the symmetry group of the electromagnetic fields for all known solutions. To further characterize these solutions, we have determined whether the electromagnetic fields are null. These characterizations have been added to the library of solutions of the Einstein field equations.

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