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Emmy Noether on Conservation of Energy in the General Theory

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Emmy Noether proved two deep theorems, and their converses, on the connection between symmetries and conservation laws. The work was done following Hilbert's discovery of the Hilbert-Einstein lagrangian and his derivation of the general theory from Hamilton's principle .The failure of local energy conservation in the general theory was a problem that concerned many at that time. Noether proved theorems which solved the problem. With her characteristically deep insight and thorough analysis, she proved very general theorems that have profoundly influenced modern physics. Einstein wrote to Hilbert "Yesterday I received from Miss Noether a very interesting paper on invariant forms. I am impressed that one can comprehend these matters from so general a viewpoint. It would not have done the old guard at Göttingen any harm had they picked up a thing or two from her..."