Atkins, Thomas
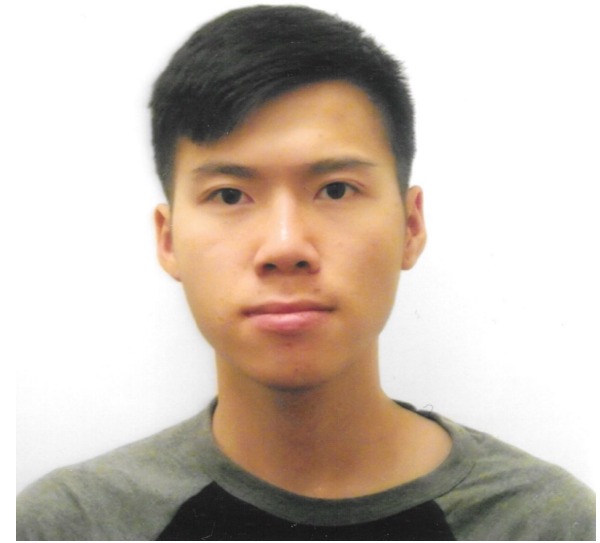EECS, Engineering Honors
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Green's Theorem
Historical Origins and Analytical Applications

In which the authors investigate the historical origins and several mathematical applications of the commonly known Green's theorem.

Discovered by George Green in the late 1820s, this theorem provides a relationship between the line integral of a particular curve and the surface integral of its enclosed region. Green's theorem is closely related to the divergence theorem, and is simply a specific case of the more general Stoke's theorem.

Beyond basic applications to flux and surface integrals, Green's theorem can be reverse applied to calculate difficult-to-evaluate area calculations. It also plays an integral role (pun intended) in the proof of other important theorems such as Cauchy's.

Keywords: *Green's theorem, Stoke's theorem, integration, vector calculus*

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MATH 147 - Vector Calculus III, Honors

- Bigger focus on the *applications* of Vector Calculus concepts
- Group work
- Smaller peer group
- End of semester projects

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