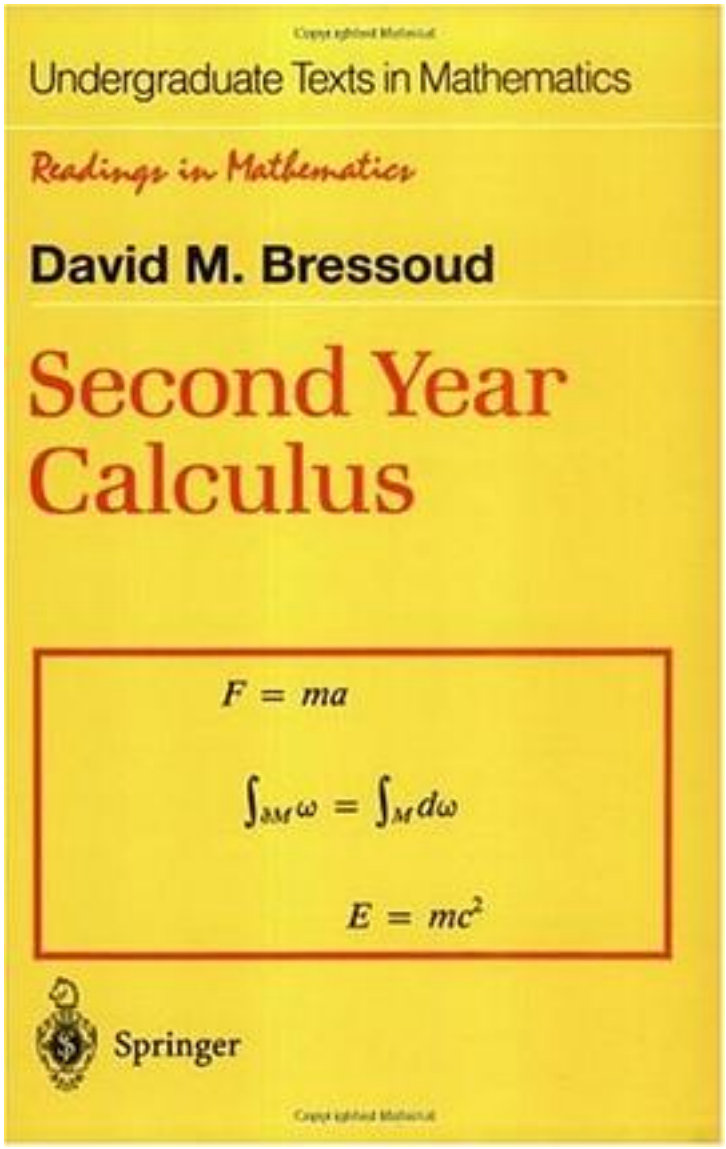
Second Year Calculus



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"Second Year Calculus: From Celestial Mechanics to Special Relativity" covers multi-variable and vector calculus, emphasizing the historical physical problems which gave rise to the concepts of calculus.The book carries us from the birth of the mechanized view of the world in Isaac Newton's Mathematical Principles of Natural Philosophy in which mathematics becomes the ultimate tool for modelling physical reality, to the dawn of a radically new and often counter-intuitive age in Albert Einstein's Special Theory of Relativity in which it is the mathematical model which suggests new aspects of that reality. The development of this process is discussed from the modern viewpoint of differential forms. Using this concept, the student learns to compute orbits and rocket trajectories, model flows and force fields, and derive the laws of electricity and magnetism. These exercises and observations of mathematical symmetry enable the student to better understand the interaction of physics and mathematics.

作者介绍:

David Marius Bressoud (born March 27, 1950 in Bethlehem, Pennsylvania) is an American mathematician who works in number theory, combinatorics, and special functions. As of 2012 he is DeWitt Wallace Professor of Mathematics at Macalester College and a former President of the Mathematical Association of America.

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标签

数学

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分析

相对论

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评论

盗用陈天权教授的评价：“（该书）是作者在Pennsylvania州立大学的讲义．作者在Freeman
Dyson的鼓励下写成了这本多元微积分．它的数学内容并不深，但是它与力学，电动力学及狭义相对论结合在一起讲．使得数学与物理的相互影响历历在目．”
【此外再次觉得物理才是数学的嫡子，理论经济公理化再厉害都是后妈生的....

“本书的数学内容是从向量分析到微分形式的初等介绍.它的特色是详细介绍了上述数学理论与 Newton 的天体力学，Maxwell 的电磁理论和 Einstein 的狭义相对论的不可分割的联系.”（陈天权）

启迪思想，引人入胜的书

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书评

作者在序言中说这本书受两本书的启发：Tom Apostol的Calculus--作者念本科时的课本，和H. Edward的 Advanced Calculus: A Differential Forms Approach。
我感觉这本书可称得上是“小说型”的课本，认真读它，做好习题，你会进入与Newton,Maxwell,Poincare,E.Cartan同呼吸的境...

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