MONTANA STATE UNIVERSITY | College of LETTERS & SCIENCE

# Physics Colloquium

**Friday, September 25, 2015**
**4:10 – 5:00 PM**
**EPS103**

## Who is Afraid of Simpson's Paradox?

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**and Regents Professor Gordon Brittan**
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**Abstract:**
Simpsons paradox (SP) poses problems for those who work with observational data. This paper will first explore and then reject some of the current proposals to block SP. One such proposal is the theoretical, the other the practical. There are in turn two versions of the theoretical proposal:
(i) Restrict the use of the collapsibility principle, thus preventing the formulation of SP, and (ii) since SP is measure-sensitive; use the cross sum ratio measure systematically so that SP won't be generated. The practical proposal, in contrast, stems from the need to apply causal inference-engine to real cases. Causal theorists who have pioneered the causal inference-engine approach think that if we consider only the faithfulness condition, along with the causal Markov condition then SP (i.e., the cessation of a specific relationship in the overall population which exists in its sub-populations) cannot be generated. We will point out that the theoretical proposals to block SP are similar to proposals for blocking paradoxes in the foundations of mathematics, and as in the case of foundations of mathematics, they also have to pay a heavy price. We will also critically review the current defense of the faithfulness condition.

**Host:**
Shannon Willoughby

****** Refreshments served in the EPS second floor atrium at 3:45 ******

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