

## **Colloquium**

### **What are the Bloch-Beilinson Conjectures?**

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The Bloch-Beilinson Conjectures are among the deepest open questions today, relating aspects of algebraic geometry, algebraic K-theory and number theory.

The conjectures have roots, on the one hand, in classical results (Euler, Riemann, Dedekind, Hilbert, Artin etc.) on special values and zeroes of zeta functions, in the period up to the early 20th century. Another source, somewhat more recent (going up to the mid 1970's) is work of Tate, Iwasawa, Lichtenbaum, Quillen and Borel, which brought in the role of algebraic K-theory.

A more recent inspiration, beginning with several key calculations of Bloch, relate these to algebraic geometry. Bloch's vision was articulated in a general, more precise form by Beilinson, around 1982, resulting in what are now called the Bloch-Beilinson Conjectures. There are also refinements (e.g. the Bloch-Kato conjectures).

In fact there is tantalising, but rather meagre, evidence to support these conjectures, inspite of about 40 years of effort by interested mathematicians.

My lecture will attempt to give an accessible introduction to this important circle of ideas.

***Thursday, May 18<sup>th</sup> 2023***

***4:00 PM (Tea/Coffee at 03:45 PM)***

***Auditorium, TIFR-H***