

COLLOQUIUM

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Partial least squares regression:

Highlights from what we learned in the past decade.

Zoom Link:

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<https://zoom.us/j/93142924001?pwd=HM5mvjV2MJsUyjMhkW8v45abYfVNZ.1>

Time: 3:00 PM

Abstract: Partial least squares (PLS) regression, which has been available for about 45 years, is a dimension reduction method that was designed to reduce the number of predictors p without requiring that the sample size n be large. It was developed mostly in Chemometrics, where it is now ingrained as a core method. There are perhaps hundreds of papers on PLS in the Chemometrics literature and new papers appear regularly.

And yet I think it fair to conclude that PLS regression has not been embraced by statistics communities as a core method, or even as a serviceable alternative that might sometimes be useful. Nor does there seem to be a common understanding as to why PLS regression should not be used. This seems a bit odd in view of the prevalence of PLS regression across the applied sciences.

Perhaps this is as it should be — perhaps not.

Along with Liliana Forzani and others, I have been studying PLS regression for the past decade. I will discuss highlights of our findings, including aspect of its history, interpretation, methodology, a few asymptotic results and perhaps some surprises. For instance, in some regressions, PLS estimators converge at the root- n rate without regard to the asymptotic relationship between n and p . One of my overarching conclusion is that PLS regression should be judged as a core statistical method and included in core curricula.