

Friday, February 13th (at 4.00pm, UK time)

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Title: New matrix differential equations and the Schwarzian derivative.

ABSTRACT

We consider an alternative construction of the Schwarzian second Painlevé equation due to Weiss (1984). Extending this technique to the matrix case then leads to a new Schwarzian matrix second Painlevé equation, which involves, rather remarkably, a new definition of matrix Schwarzian derivative. Some of the properties of this new matrix Schwarzian derivative are discussed.

Further applications of our technique then lead to a new matrix second Painlevé hierarchy, as well as to new Schwarzian matrix second Painlevé and KdV hierarchies. Finally, we present very recent results on still further extensions of the matrix second Painlevé hierarchy.