1052-37-178   **Luc Haine**, **Emil Horozov** and **Plamen Iliev***, School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332-0160. *Trigonometric Grassmannian, Calogero-Moser matrices and a difference W algebra.*

The trigonometric Grassmannian $\mathrm{Gr}^{\mathrm{trig}}$ parametrizes rank one solutions of a differential-difference bispectral problem. On the discrete side, the motion of the poles are connected to the rational Ruijsenaars-Schneider system, while on the continuous side the motion is related to the trigonometric Calogero-Moser system.

We discuss the construction of $\mathrm{Gr}^{\mathrm{trig}}$ and its parametrization in terms of trigonometric Calogero-Moser matrices. The τ-functions corresponding to subspaces $W \in \mathrm{Gr}^{\mathrm{trig}}$ belong to a module over a difference W-algebra, which is a central extension of the Lie algebra of difference operators with rational coefficients. This property can also be used to characterize the τ-functions from $\mathrm{Gr}^{\mathrm{trig}}$. (Received August 27, 2009)