On the half–wave maps equation

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We consider the following energy–critical geometric wave equation,

$$\partial_t S = S \wedge |D_x| S \ , \ t \in \mathbb{R} \ , \ x \in \mathbb{R} \ ,$$

where $S = S(t,x)$ is valued in the two–dimensional sphere $\mathbb{S}^2$ embedded in $\mathbb{R}^3$. We prove that this equation admits a Lax pair structure and we discuss the consequences of this on the dynamics.

References

[1] Patrick Gérard, E. Lenzmann , *A Lax pair structure for the half–wave maps equation*, Letters in Mathematical Physics, 2017.