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**Alan Koch\*** (akoch@agnesscott.edu). *Opposite skew left braces, Hopf-Galois theory, and solutions to the Yang-Baxter equation.* Preliminary report.

Skew left braces were introduced by Guarnieri and Vendramin in 2016 to study non-involutive, non-degenerate set-theoretic solutions to the Yang-Baxter equation. Let  $\mathcal{B} = (B, \cdot, \circ)$  be a skew left brace. Motivated by the Greither-Pareigis theory of Hopf-Galois structures on separable field extensions, we introduce the notion of an opposite skew left brace  $\mathcal{B}' = (B, \cdot, \circ')$ . Opposite braces allow us to directly connect Bachiller's construction of left ideals with the Childs construction of circle-stable subgroups of skew left braces, and hence with certain subfields of a Hopf-Galois extension. We also examine the relationship between  $\mathcal{B}$  and  $\mathcal{B}'$  with regards to their corresponding solutions to the YBE. (Received January 22, 2019)