

**Editorial Note:** This manuscript has been previously reviewed at another journal that is not operating a transparent peer review scheme. This document only contains reviewer comments and rebuttal letters for versions considered at *Nature Communications*. Mentions of prior referee reports have been redacted.

Reviewer #2:

Remarks to the Author:

The article is well written and I sincerely believe that a timely publication of it will be beneficial to the scientific community. I recommend the publication of it in its current form in Nature Communications.

Reviewer #3:

Remarks to the Author:

I am happy with the changes that authors have made and think the manuscript is much improved; they have proposed a new and novel kind of spin-valley locking mechanism (C-paired SVL).

I can, therefore, recommend the publication of this manuscript in Nature Communications.