Referee Report on the manuscript
"The Douglas-Rachford algorithm in the absence of convexity"
by Jonathan M. Borwein and Brailey Sims

The manuscript contains interesting mathematics on the Douglas-Rachford algorithm, especially in the nonconvex case which so far lacks good analyses. The manuscript should be revised taking the following points into account.

1. Please submit the next version with references compiled. It was hard to read this manuscript with "[?]" all over the place.

2. Please spell check the manuscript before submission. Some typos found include:

   (a) Page 4, middle: "the the".

   (b) Page 15, Remark 4: "wack topology".

   (c) Page 16: "Douglas-Ratchford".

   (d) Page 19, Reference [11]: "Spltting".

3. Page 2, middle: It would be more clear to write "$L := \alpha b + \mathbb{R}a$" as it is not clear what in the current definition of L the free variables are.

4. Page 3, first displayed equation for $T_{S,L}$: Delete "h".

5. Page 5, top: The product "Π" notation in the definition of A and $\tilde{X}$ is not optimal without explaining what the order in the product is. It is less ambiguous to write $A_1 \times \cdots \times A_M$ etc. You do this for B and P_B anyway. Also, the subscript "2" in the definition of $\tilde{X}$ is presumably meant to indicate that this is a Hilbert space? Why not simply write in line 3: "... of the Hilbert product space X^M"? $\tilde{X}$ is not used again anyway as far as I can tell. Finally, it would be more clear to write "$R_A(x) = \big(R_{A_1}(x_1), \ldots, R_{A_M}(x_M)\big)$".

6. Page 5, Example 1: The first projection (and hence all subsequent ones) has a typo: "+" should be "−".

7. Page 8, Theorem 1: Please provide an exact reference to Perron's reference (assuming it is in a book). Also, please make mathematically precise "isolated solution".