List of changes:

1. The following was added after the introduction of Mott scattering cross section:
   The Mott scattering cross section is calculated from the Dirac equation, taking into account the spin--orbit interaction (contrary to the Rutherford cross section which neglects this effect). The numerical values depend on the atomic potential assumed in the calculations; at low energies and low scattering angles the screening of the nuclear Coulomb potential by the electron cloud cannot be neglected (as in the Rutherford formula assuming pure Coulomb field of the nucleus).
2. The following was added after the definitions of the T and U functions:
   The S, T and U functions have the following interpretation: (i) S describes the change of the polarization vector component perpendicular to the scattering plane, (ii) T describes the change of the polarization vector component parallel to the scattering plane, and (iii) U describes the polarization appearing in the scattering plane, but perpendicular to the initial polarization vector.
3. Reference [10] was removed as it was included mistakenly and a few other typesetting errors were corrected.

Information for the reviewers:

1. Information about Rutherford scattering and the interpretation of the T and U functions were added as suggested.
2. Details of the original implementation can be found in ref. [4]. The source code has not yet been made publicly available. We plan to make it available, with a detailed description, in the near future.
3. Since the cross section is divergent in $\theta=0$, the vast majority of events in Fig. 1 are in the vicinity of the (0, 0) point. This information would be the only benefit of adding color scale to Fig. 1.
4. We do not know of any simulation code available to the public that takes into account the effects we are trying to simulate.
5. A comprehensive analysis of the underlying physical phenomena would require more data, in particular for several different beam energies and target thicknesses; further work is currently in progress.
6. In all Mott polarimetry experiments there is some background from electrons backscattered behind the target, which leads to the decrease of the effective Sherman function. Additionally, thin targets often consist of a thin layer of gold deposited on some supporting foil, but unfortunately we did not find any information about this in the original paper [9] and were unable to retrieve it from the authors, so it was not taken into account in the simulation. However, we prefer not to speculate about the source of the differences to the experimental data in the article, in order not to depreciate the experimental work.