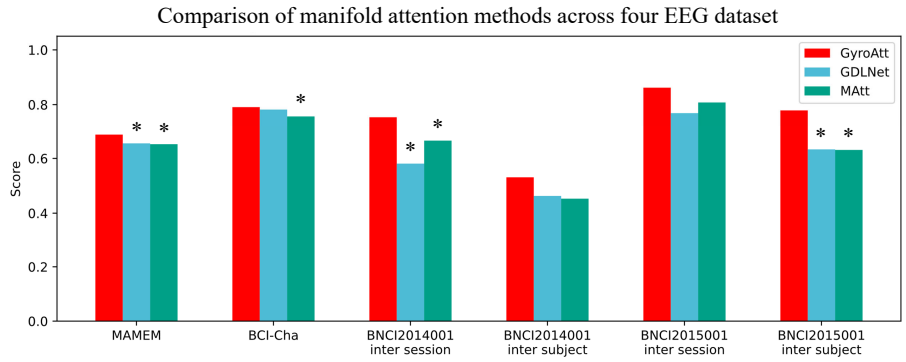

Figure A: @gfKp (R3): Comparison of accuracy, variance, and t-test results between GyroAtt and other manifold-based attention methods across all datasets. Asterisks (*) indicate statistical significance with $p < 0.05$.

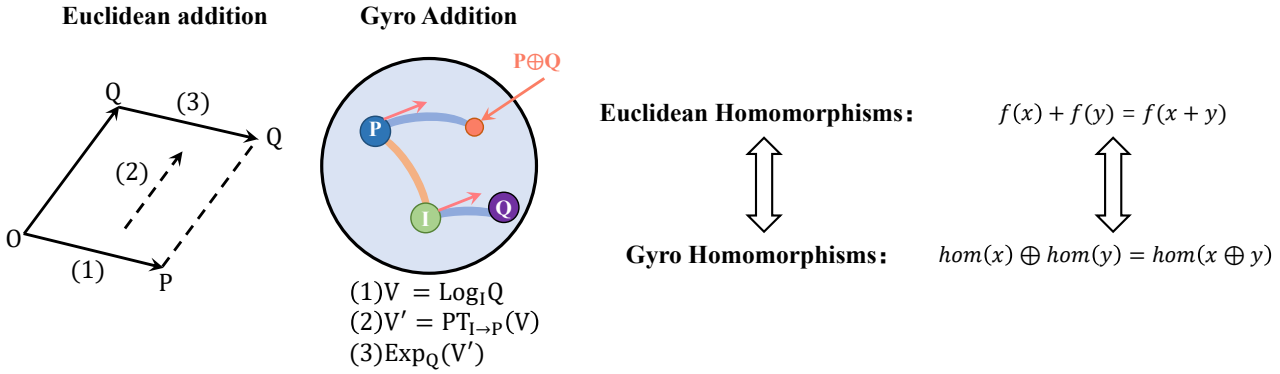

Figure B: @7ygD (R2) @gfKp (R3): Illustration of gyro addition and gyro homomorphism. Given a base point $\mathbf{I}$ and two points $\mathbf{P}, \mathbf{Q} \in \mathcal{M}$, the gyro addition $\mathbf{P} \oplus \mathbf{Q}$ is defined as the image of $\mathbf{Q}$ under the isometry that translates $\mathbf{I}$ to $\mathbf{P}$ along the geodesic connecting them. Analogous to Euclidean addition, gyro addition consists of three steps: 1. Logarithmic mapping at $\mathbf{I}$: $\mathbf{V} = \log_{\mathbf{I}}(\mathbf{Q})$. 2. Parallel transport of $\mathbf{V}$ form $\mathbf{I}$ to $\mathbf{P}$: $\mathbf{V}' = \mathrm{PT}_{\mathbf{I}\to\mathbf{P}}(\mathbf{V})$ 3. Exponential mapping at $\mathbf{P}$: $\mathbf{P} \oplus \mathbf{Q} = \exp_{\mathbf{P}}(\mathbf{V}')$. The gyro homomorphism preserves the gyrovector structure, i.e., $\hom(\mathbf{P} \oplus \mathbf{Q}) = \hom(\mathbf{P}) \oplus \hom(\mathbf{Q})$, which is analogous to the Euclidean case: $f(x + y) = f(x) + f(y)$.

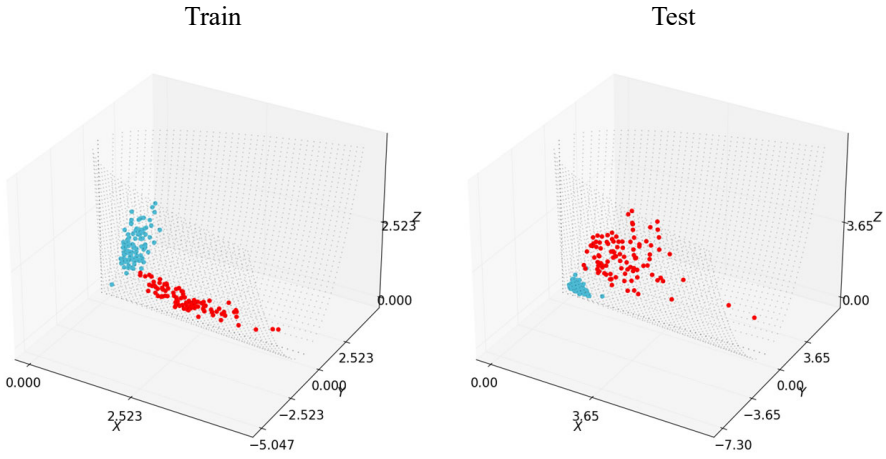

Figure C: @gfKp (R3): Rie-SNE visualization of features learned by GyroAtt-SPD on BNCI2015001. Different colors denote different categories. The increased inter-class separation and intra-class compactness suggest that EEG tasks occupy distinct regions in the manifold space.

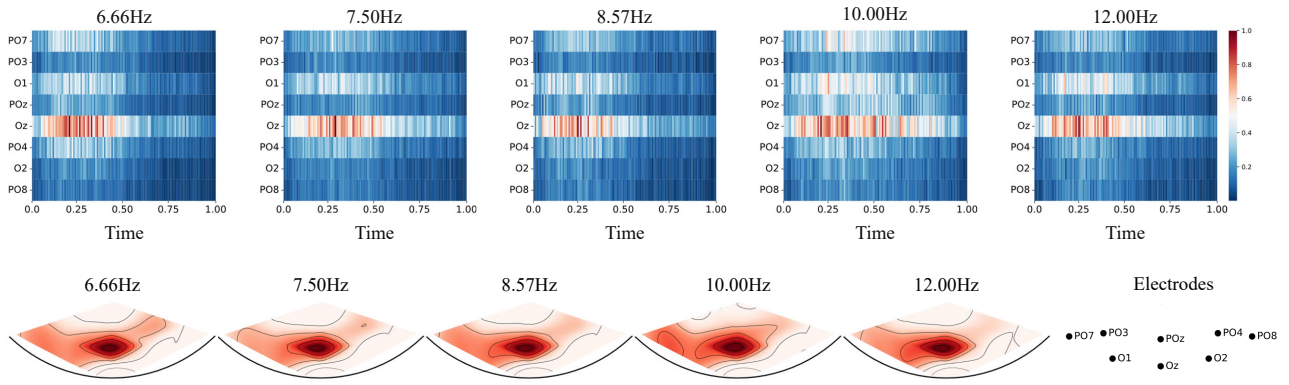

Figure D: @gfKp (R3): The spatial topo-maps and heatmaps of GyroAtt-SPSD for the S11 subject across five different frequencies on the MAMEM-SSVEP-II dataset. We visualize the absolute gradient responses of the model, where the dark red pixel indicates stronger gradient activations. In heatmaps, the x-axis and y-axis represent time and EEG channels, respectively.

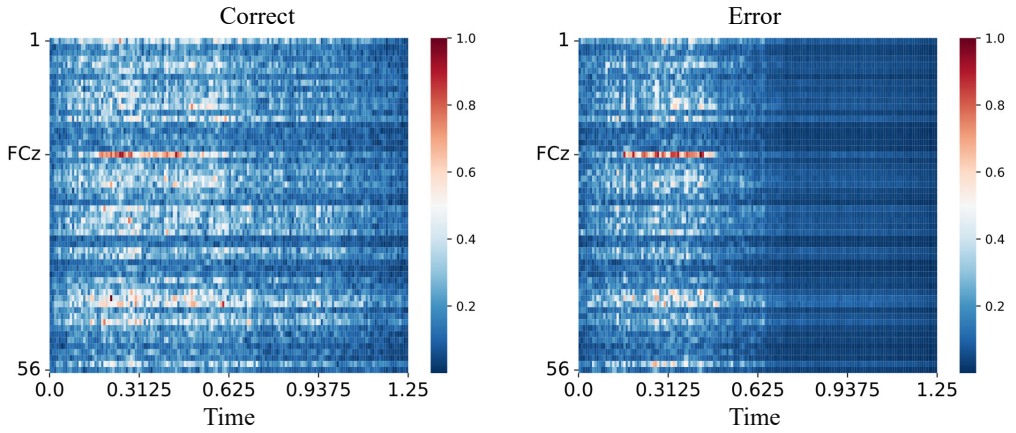

Figure E: @gfKp (R3): The visualization results of GyroAtt-SPSD on the BCI-ERN datasets S7 model for two classes (error and correct) are presented, while Electrodes present a diagram of the electrode distribution.

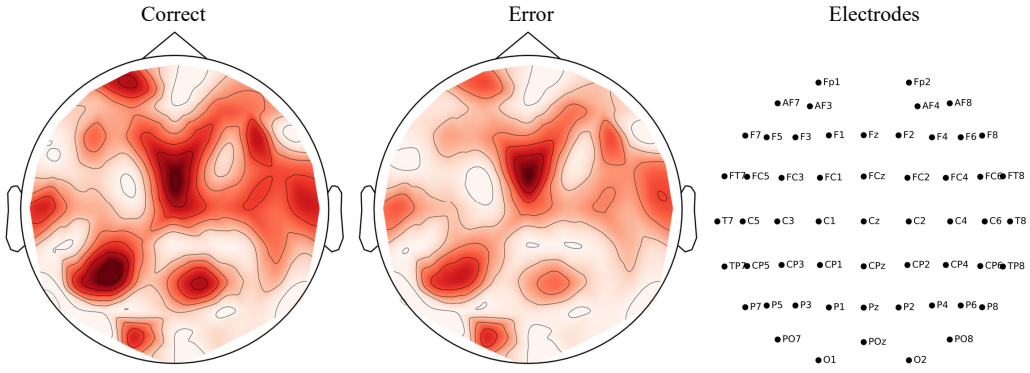

Figure F: @gfKp (R3): heatmaps of GyroAtt-SPSD for two classes on the BCI-ERN datasets. The x-axis represents time, and the y-axis represents EEG channels. The strong gradient responses in 'correct' and 'error' predominantly center around the FCz.