



## **Somatotopic and spatiotopic encoding of tactile timing and motion**

Shinobu Kuroki, Junji Watanabe, Susumu Tachi, and Shin'ya Nishida  
Tachi Lab, The University of Tokyo, Japan  
E-Mail: [Shinobu\\_Kuroki@ipc.i.u-tokyo.ac.jp](mailto:Shinobu_Kuroki@ipc.i.u-tokyo.ac.jp)

Touch is a unique modality with regard to its spatial representation. Since various body parts move around dynamically, the tactile space can be represented in two coordinates, somatotopic coordinate defined by cortical topography, and spatiotopic coordinate defined in the environment. To study the computational mechanism of the central tactile processing, we investigated observers' judgments on the relationships between tactile stimulations at different skin locations. We have shown that simple temporal tasks, such as simultaneity judgment, motion detection, and interval estimation, are performed dominantly in the somatotopic coordinate (Kuroki et al. 2009 ECVF). On the other hand, our recent experimental results using tactile motion adaptation phenomenon indicated that motion direction judgment (spatio-temporal task) is performed in the spatiotopic coordinate.