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Abstract for an Invited Paper  
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**Beller Lectureship: Dynamics of skyrmions under electric current<sup>1</sup>**

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Current-driven motion of the skyrmions and skyrmion crystal is attracting intense attention because of the very small critical current density, but the microscopic mechanism of their motion is not yet explored. In this talk, I will present a numerical simulation of the Landau-Lifshitz-Gilbert (LLG) equation and an analytic theory, which reveals a remarkably robust and universal current-velocity relation of the skyrmion motion driven by the spin transfer torque unaffected by either impurities or nonadiabatic effect in sharp contrast to the case of domain wall or spin helix. This is due to the peculiar dynamics of skyrmions characterized by inherent absence of the intrinsic pinning and flexible shape-deformation of skyrmions so as to avoid pinning centers. The effect of the constricted geometry will be also discussed. This work has been done in collaboration with J. Iwasaki and M. Mochizuki.

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