

Using physics in linguistic research: Language diffusion in Austria and Hungary

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Both matter and language are dynamic systems constantly in motion. Through this movement, languages can spread, i.e. the region where they are used becomes larger. Oftentimes, the spread of one language means that another language is replaced and ultimately, languages may even die out. To try to predict these developments and develop intervention measures, computer simulations and mathematical models are used. These models apply the concept of physical diffusion (movement of atoms) to linguistics (movement of languages) and allow the tracking of language spread over time and space.

In this talk, I will show that it is possible to study language shift on a large scale by using methods from diffusion physics. We present a microscopic model for language diffusion [1] and its application to data on minority languages in Austria and Hungary. Our model allows us not only to identify the driving factors for language shift, but also to follow deviating local processes such as the different dynamics in urban areas.

[1] Prochazka K, Vogl G (2017) PNAS 114(17): 4365–4369
