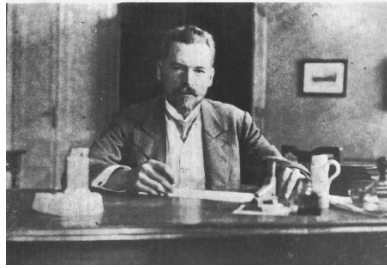


# 36th M. Smoluchowski Symposium on Statistical Physics: Soft Matter, Information Processing and Nonequilibrium Fluctuations



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## Universal scaling relation for growth phenomena

*Wednesday, 27 September 2023 09:40 (40 minutes)*

The Family-Vicsek relation [1] is a seminal universal relation obtained for the global roughness at the interface of two media in the growth process. In this Letter, we revisit the scaling analysis and, through both analytical and computational means, show that the Family-Vicsek relation can be generalized to a new scaling independent of the lateral size, substrate dimension  $d$ , and scaling exponents. This is part of universal behavior, since scaling [2], renormalization and fractals [3-7] are connected. We use properties of the Edwards-Wilkinson and lattice models in the Kardar-Parisi-Zhang and Villain-Lai-Das Sarma universality classes for  $1 \leq d \leq 3$  to support our claims.

### References

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