Santamaria *et al.* Reply: Schwarzacher and Huo, in their Comment [1] to our recent Letter, claim that electrodeposited Cu films show anomalous scaling with similar roughness exponents as found by us in sputtered Fe/Cr superlattices [2]. They attribute this to the similar microstructure of Cu films and superlattices, and propose that the disagreement of scaling exponents with theoretical predictions is because grain formation is not taken into account.

Surface growth models are simplified descriptions of a complex reality in which, aside from short range (interatomic) interactions, long range nonlocal effects determined by surface morphology (grains) and geometry of the incoming particle front (shadowing) play an important role in kinetic roughening. Most data showing agreement with theoretical models correspond to films grown by molecular beam epitaxy, while discrepancies are frequently encountered in surfaces grown by more complex techniques (e.g., sputtering and electrodeposition) [3]. Superlattices present an additional source of complication since they have more than one constituent, and interface specific disorder (strain, interdiffusion, roughness, etc.) may alter the growth kinetics in all directions. Therefore, our experimental scaling exponents not fitting theoretical predictions by no means can be ascribed solely to the layered (superlattice) structure, although this could certainly play a role.

Anomalous scaling is described by five interdependent exponents [4], describing the short scale dynamics (α_{loc} and β_{loc}), and roughening at long scales (α, β, and $1/z$). Although certain exponents are similar for superlattices (SL) and Cu single films (SF), others are not. For comparison, see Table I. Samples showing columnar growth (both SL and SF) display a constant roughness lateral correlation length with thickness (time) and $\beta = \beta_{\mathrm{loc}}$. However, they show very different values of the roughness lateral correlation length (10 nm in our low pressure SL [2] and roughly 1000 nm in the SF of Fig. 1 [1]). Grain size may set a limit to the roughness lateral correlation length and this might be the reason for $\beta = \beta_{\mathrm{loc}}$ although with very different absolute values for SL and SF (see Table I). A comparison of SL (high pressure) and SF (nanocrystalline) show similar α_{loc} and β, but also very different α, β_{loc}, and $1/z$. The relationship of this to grain growth is still unclear. According to the different values of the exponents, SL and SF show also very different time exponents of the aspect ratio of the interface which provides a measure of the average interface slope [2](see Table I).

Studies aimed at correlating values of the anomalous scaling exponents with structural features will certainly stimulate theoretical studies to clarify the physical origin of this complex behavior. However, the discussion above emphasizes that it is dangerous to draw far reaching conclusions from similarities between particular exponents of very different systems, which might be accidental.

TABLE I. Anomalous scaling exponents for high and low pressure superlattices (SL) after Ref. [2] and for electrodeposited Cu single films (SF) [1]. Exponents α and $1/z$ are determined from the relations $\alpha_{\mathrm{loc}} = \alpha\text{-}\beta_{\mathrm{loc}} z$ and $\alpha_{\mathrm{loc}} = (\beta\text{-}\beta_{\mathrm{loc}})z$ [4]. The aspect ratio of the interface $[\sigma_S/\xi(t)]$ is defined as the ratio of the saturation interface width σ_S (scaling as t^{β}) and the roughness lateral correlation length ξ (scaling as $t^{1/z}$). Similarities exist for underlined quantities.

	α_{loc}	β_{loc}	β	α	$1/z$	$\sigma_S/\xi(t)$
SL (low pressure) (columnar)	0.65	0.22	0.25	$\cdots$	≈ 0	$t^{0.25}$
SL (high pressure)	<u>0</u>.75	<u>0</u>.22	0.76	1.05	0.70	$t^{0.06}$
SF (columnar)		0.78	0.78	$\cdots$	≈ 0	$t^{0.78}$
SF (nanocrystalline)	<u>0</u>.78	<u>0</u>.21	0.57	1.24	0.46	$t^{0.1}$

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