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On handle squashing in rational conformal field theories
MICHAEL CRESCIMANNO, ANTHONY BENNETT, Dept. of Physics and Astro., Youngstown State University — Dovgard and Gepner [1] have found new fusion rings of rational conformal field theories (RCFT) in 2-dimensions that are not related to current algebras. A RCFT fusion ring is the set of basic field operators along with the local resolutions of their products. Every RCFT fusion ring has a handle operator, a distinguished linear combination of these basic fields whose power is associated with the space of fields of higher genus surfaces. In Refs. [2,3] the inverse of the handle operator (i.e. 'handle squashing') of every RCFT from current algebras was shown to have a universal form depending essentially only on the lie algebra of the currents and not on its level. We prove why this is true in general for any RCFT, and as a application, display the handle squashing operator of these new theories unrelated to current algebra.[1] R. Dovgard and D. Gepner, "On Conformal Field Theories with Low Number of Primary Fields,"J.Phys.A 42:304009 (2009), arXiv:0811.1904,[2] M. Crescimanno, "Fusion potentials for G/K and handle squashing," Nucl. Phys. B, 393, 361 (1993).[3] M. Crescimanno, "Handle operators of coset models," Mod. Phys. Lett. 8, 1877 (1993).

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