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Continuous Logic with Integral Quantifiers

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This is a joint work with S.M. Bagheri. We setup a logical framework for the study of metric structures equipped with some (finitely additive) measures. In addition to the usual connectives of continuous logic, the integral operator is treated as a quantifier. By proving a definable version of Riez representation theorem, we show that one can interpret this logic within continuous logic and therefore the main features of continuous logic, e.g. compactness, downward Löwenheim-Skolem theorem, elementary Chains theorem, Tarski-Vaught test, remain valid.