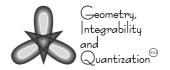
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## A GENERALIZATION OF THE QUANTIZATION OF POISSON MANIFOLDS

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Abstract. We propose a unified perspective of quantization using a categorical approach. From a fixed Poisson algebra, we define quantization categories as subcategories of the R-module category equipped with the structure of classical limits. The generalized quantization categories have a huge structure including matrix regularization, strict deformation quantization, prequantization, Poisson enveloping algebra and so on.

*MSC*: 81R60, 81S10, 17B63 *Keywords*: Category theory, noncommutative geometry, Poisson manifold, quantization

## 1. Quantization Category

The main part of this article is a digest of [4], and some new results about general properties of the quantization category are added.

In this section, we review the quantization category [4]. Before we define the quantization category, we have to introduce some categories as a preparation.

**Definition 1.** Let M be a fixed Poisson manifold. Let  $\mathscr{R}Mod$  be a category of R-module for a commutative ring R over  $\mathbb{C}$ . For a Poisson algebra  $\mathcal{A}(M)$  on the Poisson manifold M, a subcategory  $\mathscr{P}(\mathcal{A}(M))$  of  $\mathscr{R}Mod$  is defined as follows.

- 1.  $\mathcal{A}(M) \in \mathrm{ob}(\mathscr{P}).$
- 2. For arbitrary  $M_i \in ob(\mathscr{P})$ , at least a morphism  $T_i \in \mathscr{P}(\mathcal{A}(M), M_i)$  exists. We call  $T_i$  a quantization map.