CORRECTION TO THE ARTICLE
QUIVER GRASSMANNIANS, QUIVER VARIETIES AND THE
PREPROJECTIVE ALGEBRA

ALISTAIR SAVAGE AND PETER TINGLEY
CORRECTION TO THE ARTICLE
QUIVER GRASSMANNIANS, QUIVER VARIETIES AND THE
PREPROJECTIVE ALGEBRA

ALISTAIR SAVAGE AND PETER TINGLEY

Volume 251:2 (2011), 393–429

For quivers not of finite or affine type, certain isomorphisms asserted in the
article under correction do not hold, as pointed out by Sarah Scherotzke.
This note describes the affected results briefly. A corrected version of the
paper can be found at arXiv 0909.3746.

The original published version of this paper contained the following errors. We
thank Sarah Scherotzke for bringing this to our attention.

Error 1. If \( g \) is not of finite or affine type, then the Nakajima quiver variety \( \Lambda(v, w) \)
is not actually isomorphic to the variety \( \text{Gr}(v, q^w) \) of all \( v \)-dimensional subrepresentations
of the injective module \( q^w \). In fact, beyond affine type, \( \text{Gr}(v, q^w) \) does
not have a natural variety structure, or, at least, is not finite-dimensional. This is
because there are continuous families of nonisomorphic modules, all of which have
a nontrivial extension with some one-dimensional simple module \( S_i \).

There are two ways to modify the statement to make it true, and, with either
of these modifications, the work in the original paper does prove the correct re-
sult. One must replace \( \text{Gr}(v, q^w) \) with either the variety \( \text{NGr}(v, q^w) \) of nilpotent
\( v \)-dimensional subrepresentations of \( q^w \), or with the variety \( \text{Gr}(v, \tilde{q}^w) \) of all \( v \-
dimensional subrepresentations, but where the injective hull \( q^w \) in the category of
all representations of the preprojective algebra has been replaced with the injective
hull \( \tilde{q}^w \) in the category of locally nilpotent representations. Our work shows that
these are naturally isomorphic, and are also isomorphic to \( \Lambda(v, w) \).

Error 2. Lemma 2.9 (which essentially asserted that \( \text{Gr}(v, q^w) \) and \( \text{NGr}(v, q^w) \)
were isomorphic) is false beyond affine type, and should be removed. The proof is
simply incorrect. In fact, this caused most of the issues in Error 1.

MSC2010: 16G20.
Keywords: quiver grassmannian, quiver variety, preprojective algebra.
A corrected version of the paper that addresses these points can be found at arXiv 0909.3746. We show that both of the fixes to Error 1 discussed above work, although we mainly work with $\text{Gr}(v, \tilde{q}^w)$. The reason is that $\tilde{q}^w$ is a direct limit of finite-dimensional varieties, and each quiver grassmannian is contained in one of these. Thus, with this viewpoint, the quiver grassmannians are naturally subvarieties of ordinary grassmannians, which we find helpful.

Received May 6, 2014.

Alistair Savage  
Department of Mathematics and Statistics  
University of Ottawa  
585 King Edward Ave  
Ottawa ON K1N 6N5  
Canada  
alistair.savage@uottawa.ca

Peter Tingley  
Department of Mathematics and Statistics  
Loyola University Chicago  
Chicago, IL 60660  
United States  
ptingley@luc.edu
A combinatorial characterization of tight fusion frames  
MARcin BowNiK, KurT luOTO and Edward Richmond  

Combinatorics of finite abelian groups and Weil representations  
KUNAL DUTTA and AmRItAnShu Prasad  

Compact anti-de Sitter 3-manifolds and folded hyperbolic structures on surfaces  
FRAnCOIS GuÉRITAUD, FANNY KASSEl and MAXIME WolFF  

Circular handle decompositions of free genus one knots  
Fabiola Manjarrez-Gutiérrez, VíCTOr núñez and EnriQue Ramírez-Losada  

A pointwise a-priori estimate for the $\bar{\partial}$-Neumann problem on weakly pseudoconvex domains  
R. MichAel Range  

Explicit Hilbert–Kunz functions of $2 \times 2$ determinantal rings  
MarcuS roBInsoN and Irena SwAnsoN  

The Johnson–Morita theory for the ring of Fricke characters of free groups  
TakAo SatoH  

Global representations of the conformal group and eigenspaces of the Yamabe operator on $S^1 \times S^n$  
MARK R. SepAnski and Jose A. Franco  

Rota–Baxter operators on the polynomial algebra, integration, and averaging operators  
ShAnghua ZhENG, Li GuO and MArkus rosenkranz  

Correction to the article Quiver grassmannians, quiver varieties and the preprojective algebra  
AlistAir Savage and Peter tingley