Erratum to "Topological central extensions of semi-simple groups over local fields" by Gopal Prasad and M. S. Raghunathan

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Introduction

In the following corrections and addition, we will use the notation and numbering of the original paper [2], [3]. Thus, for example, $\mathfrak{f}$ will denote the residue field of k and F its quadratic extension. For $z \in \mathsf{F}$, $\overline{z}$ will denote its conjugate over $\mathfrak{f}$.

Most of the corrections listed below are minor except a new proof of Proposition 7.28, and corrected statements and proofs of Lemma 7.37 and Proposition 7.38. In the original proof of Proposition 7.28, Corollary 2 of Artin's paper [1] was used, but we overlooked that this corollary has an exception. The proof of this proposition given below is different in that it does not use [1, Cor. 2] and it is quite short.

The proof of Lemma 7.37 given in the original paper is incorrect and, in fact, the assertion is false for the following groups: Assume that k is a nonarchimedean local field whose residue field is the field with two elements and K is the maximal unramified extension of k. Then the original Lemma 7.37 does not hold for groups G which do not split over K, are not quasi-split over k, and the K-root system of G is of type $\mathbf{C}_{n+1}$. The following is an explicit description of all such groups: Let h be a nondegenerate hermitian form in $2n + 2$ variables, of Witt index n, defined in terms of a ramified quadratic Galois extension ℓ of k. Then $G = \mathrm{SU}(h)$.

In the original paper, Lemma 7.37 was used in the proof of Proposition 7.38 which in turn was used in the proof of several results in Section 8 of the paper. Therefore, in case the residue field of k is the field with two elements, we need to exclude the groups $G = \mathrm{SU}(h)$, described in the previous paragraph, from Theorems 8.3, 8.41, 9.4, 9.5 and 10.4. We hope it will be be possible to handle these excluded groups using a different method.