1040-17-141 **Alexandr N. Grishkov*** (`shuragri@gmail.com`), , Brazil. *An analogue of Campbell-Hausdorff formula in characteristic p>0.* Preliminary report.

Let $A = A_k(x, y)$ be a free algebra in some variety $\mathcal{V}$ of associative algebras with free generators x, y, over a ring k Then $A = \sum_{i=0} \oplus A_i$, where A_i is a subspace of A of homogenious elements of degree i.

By $\mathcal{A}$ we denote the $k-$algebra of series $f = \sum_{i=0}^{\infty} f_i$, $f_i = f_i(x, y) \in A_i$.

By definition A_f is the minimal $k-$submodule of A such that $x, y \in A_f$ and for any $v, w \in A_f$ and any f_i we have that $f_i(v, w) \in A_f$.

Let $g(x) = 1 + x + g_2x^2 + \ldots \in k[[x]] \subset \mathcal{A}$. Then there exists $l(x) \in k[[x]]$ such that $l(g(x)) = g(l(x)) = x$. Define Campbell-Hausdorff $g-$serie $CH(g) \in \mathcal{A}$ such that

$CH(g)(x, y) = l(g(x)g(y))$.

A serie $e(x) = 1 + x + \ldots \in k[[x]]$, is an $\mathcal{V}_k-$exponent if for any other $g(x) = 1 + x + \ldots \in k[[x]]$ we have that from $A_{CH(g)} \subseteq A_{CH(e)}$ hence $A_{CH(g)} = A_{CH(e)}$.

The main result is:

Let $\mathcal{V}$ be any variety of associative algebras over the ring of $p-$adic intergers $\mathbf{Z}_p$. Let $e(x) = 1 + x + \ldots, \Phi(x) = x + \ldots \in \mathbf{Z}_p[[x]]$ be such that

$e'(x) = \Phi(x^{p-1})e(x)$,

then $e(x)$ is $\mathcal{V}_{\mathbf{Z}_p}-$exponent. (Received January 30, 2008)