962-46-326 **Yuh-Jia Lee*** (yjlee@nuk.edu.tw), Department of Applied Mathematics, National University of Kaohsiung, Kaohsiung, Taiwan 811. *A generalization of the Riesz representation theorem to infinite dimensions.*

Let H be a real separable Hilbert space and let $E \subset H$ be a nuclear space with the chain $\{E_m : m = 1, 2, \ldots\}$ of Hilbert spaces such that $E = \cap_{m=1}^{\infty} E_m$. Let E^* and E_{-m} denote the dual spaces of E and E_m, respectively. For $\gamma > 0$, let $\mathcal{C}_{\infty,\gamma,c}$ be the collection of complex-valued continuous functions f defined on E^* such that

$$\|f\|_{m,\gamma} := \ sup_{x \in E_{-m}} \{|f(x)| \exp(-\gamma^{-1}|x|_{-m}^{\gamma})\}$$

is finite for every m. Then $\mathcal{C}_{\infty,\gamma,c}$ is a complete countably normed space equipping with the family $\{\|\cdot\|_{m,\gamma} : m = 1, 2, \ldots\}$ of norms. Using a probabilistic approach, it is shown that every continuous linear functional T on $\mathcal{C}_{\infty,\gamma,c}$ can be represented uniquely by a complex Borel measure ν_T satisfying certain exponential integrability condition. As an application, we establish a Weierstrass approximation theorem on $E^*$for $\gamma \geq 1$. (Received September 11, 2000)