

<b>O13-4</b>	<b>GEOPHYSICAL INVESTIGATION OF EASTERN ROMAN EMPIRE'S GREAT PALACE'S PITTAKIA SECTION, ISTANBUL, TURKEY</b>
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Pittakia is a document library section of the Eastern Roman Empire's (ERE) great palace, taking place at eastern side of Saint Sophia museum. Initiation of excavation resulted with discovery of galleries and glorious wall painting. To find extension of such findings, multidisciplinary geophysical study, consisting microgravity, vertical gradient, magnetism and gradiometry, shallow TEM conductivity (EM61) and GPR were run at 6300 stations with maximum station interval of 50cms.

Construction materials are bricks, limestone and sandstone. Widths of corridors are about 1.5 to 2.5 meters, and heights are about 6 to 9 meters. Some of them are empty, some are filled with remnants of destructed other later building materials, which has higher magnetizations.

If inside galleries are empty, they are recognized with low magnetic anomalies, with magnitude about -1000 to -1300 nT/m and magnitude of microgravity anomalies are about -25 to -150  $\mu\text{gal}$  and vertical gradients is about -50 to 80  $\mu\text{gal/m}$ . four channel EM61 was successful to locate metallic objects clearly. Interpretations revealed that dominant extent of structures is in EW direction and depth to the bottom is 9 to 12 meters.

In conclusion, surface geophysics has accomplished to clarify surface projection of hidden structures of Pittakia section of ERE great palace.

GRAVITY	MAGNETIC			
	Gravity Anomaly $\mu\text{gal}$	Gradient $\text{dg/dz}$ $\mu\text{gal/m}$	Total Field Gamma( $\gamma$ )	Gradient $\text{dT/dz}$ $\gamma/\text{meter}$
<b>x y z</b> <b>8 x 8 x 9 m</b> <b>Excavated Pit</b>	(-125)-(500)		-2800	
<b>Empty Gallery</b>	(-25)-(-150)	(-50)-(80)	(-1600):(-2000)	(-100)-(1300)
<b>Filled Gallery</b>		0		0
<b>Mean Value</b>	4948526	0	46200	0
<b>Daily Variation</b>	500 250	----	1000	----

